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THE BOSTON
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VOLUME 191 NOVEMBER 6, 1924 NUMBER 19

ORIGINAL ARTICLES

THE RESPONSE OF THE CARDIO-VASCULAR SYSTEM TO RESPIRATORY EXERTION*

BY HAROLD M. FROST, M. D., BOSTON, MASS.

Assistant Medical Director, New England Mutual Life Insurance Co.

DURING the last two years, in the Medical Department of the New England Mutual Life Insurance Company, we have been endeavoring to discover a method of separating the good risks from the bad in that numerous group of individuals, apparently in good health, who present without other signs of disease a rapid pulse; irregularity of cardiac rhythm; a murmur of the "functional" type; a blood pressure higher or lower than usually conceded to be normal for their age and environment; or an unusual cardiac irritability with a rapid and extensive reaction to muscular exertion or psychic influence. We were well aware that these signs might indicate the onset of cardio-vascular degeneration. On the other hand, it was equally obvious that a large proportion of such individuals might develop no further signs, might live out their span with normal vigor. All previous efforts at selection by the usual methods of examination had failed, had proved emphatically that we could not issue standard insurance to these risks as a whole. It is my intention to communicate to you how we are trying to solve this problem.

It appeared to us that, having ruled out by the usual methods the probability of serious, well-established cardio-vascular impairments in any individual presenting abnormal signs, the only method of approach lay along the line of determination of the functional capacity of his cardio-vascular system. If we could subject him to a cardio-vascular strain which could be fairly well measured, which could be applied months or years later under approximately the same conditions and with approximately the same degree of severity; and if, moreover, his reaction to this strain could be so permanently recorded that it would be available for comparison with subsequent reactions, we believed we should be able to determine his immediate insurability within safe time limits, and by subsequent examinations to determine the degree of degenerative progress for our future guidance.

I shall not attempt to enumerate the various functional tests with which you are familiar. While a few of them could be used in our work and would undoubtedly shed some light upon cardio-vascular function, none of them seemed sufficiently adapted to our purposes. It was essential that we employ a method which was not encumbered with clumsy apparatus, and which could be easily applied,—as easily to the man of sixty or the frail woman, as to the youth of twenty or the athlete. We preferred a method which would permit constant observation of the blood pressure, cardiac rate and rhythm, of the response of the cardio-vascular system throughout the entire period of strain.

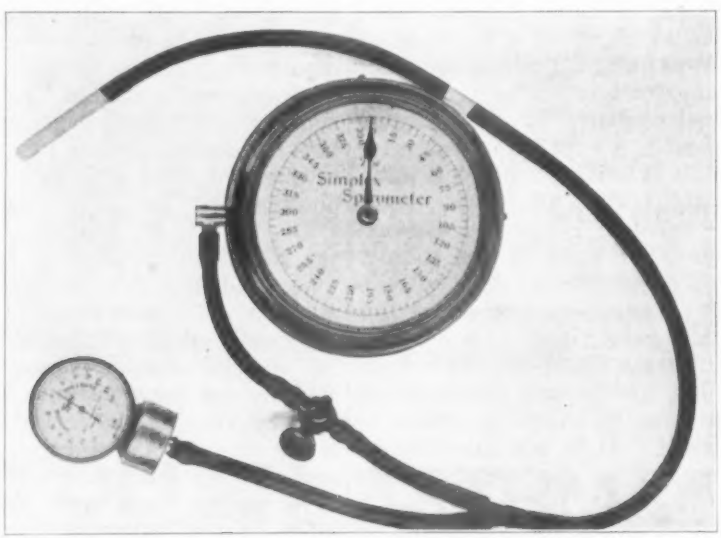
Dr. Edwin W. Dwight, Medical Director of the New England Mutual Life Insurance Company, had long felt the need for a more adaptable test of cardio-vascular function. He had previously observed that a considerable change in systolic pressure resulted from blowing steadily against resistance. It occurred to him that by varying the intrathoracic pressure, one might produce a strain upon the cardio-vascular system, with synchronous changes in blood pressure, cardiac rate and rhythm, which would offer some indication of the severity of the strain and of the efficiency with which it was resisted. He outlined his idea to me and invited me to attempt to develop a technique which would put it into execution.

The apparatus finally decided upon consists of two elements: a vacuum-pressure Tycos gauge and a Simplex spirometer. The gauge is necessarily delicate, registering positive and negative pressure in centimeters of mercury. It is manufactured by the Taylor Instrument Companies of Rochester, New York. The spirometer is of the "wind-wheel" type, the revolutions of the wheel registering upon the dial the amount of air expired, in cubic inches. It is manufactured by Messrs. Roberts & Quinn, 401 Bridge Street, Brooklyn, New York. We recognize that this type of spirometer does not accurately register vital capacity. A certain amount of air is "lost" in overcoming the inertia of the mechanism at the beginning of expiration; while after expiration has ceased the wheel continues to

*Read before the American Climatological and Clinical Association, May 2, 1924, Atlantic City, N. J.

revolve for a short period until its momentum ceases. To a certain extent the latter fault compensates for the former. This type, however, suits our purpose, in that it is compact, gives a sufficiently accurate idea of the vital capacity and offers considerable resistance to forced expiration.

The gauge and spirometer are connected by means of a Y tube,—of metal, glass or hard rubber,—to a suitable length of rubber tubing. To this in turn is attached the mouthpiece, consisting of a six inch piece of rubber tubing with a smooth glass tip. A sterile mouthpiece is used for each subject. Between the Y tube and the spirometer a stop-cock is inserted in order that the spirometer may be cut off at will. The apparatus is compact and may be easily carried in a small bag. No objection can be made to it from the hygienic point of view. The mouthpiece is sterile, and if the technique is properly carried out, the air cannot be withdrawn from the system. (Photograph.)

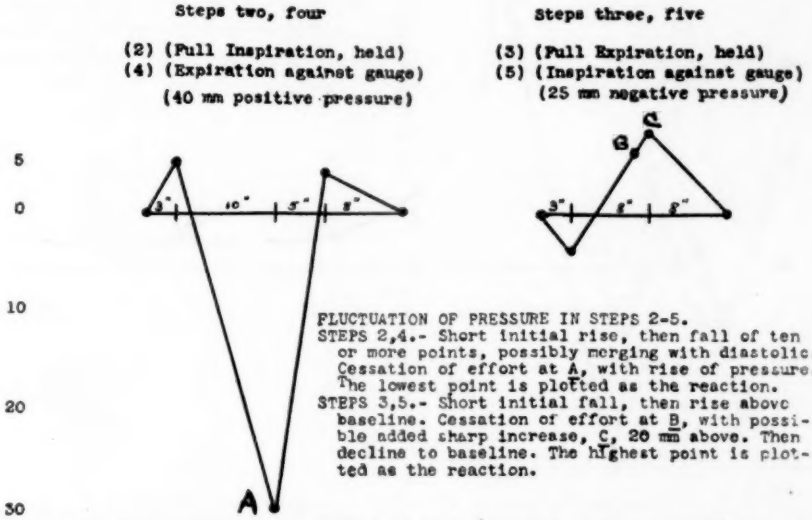


The technique is as follows. The preliminary notation of physical signs is made. The subject then sits at the desk with the apparatus lying before him. The blood pressure cuff is applied to the arm, preferably with the bowl of the stethoscope tucked under its lower edge over the brachial artery. This leaves one of the examiner's hands free for manipulation of the apparatus. Either the mercury or anaeroid manometer may be used. The systolic and diastolic pressures, pulse rate and rhythm are first noted. The subject is then instructed to draw in his breath as deeply as possible, and hold it for about ten seconds. It is essential that he hold it by closing the glottis and allowing the chest and diaphragm to relax against the inflated lungs. The change in systolic pressure is noted by auscultation until the intrapulmonary air is released. The examiner jots down his figures for the step and proceeds to the next. An interval of about ten seconds has elapsed. The systolic pressure is again determined. The subject is then instructed to breathe out as far as possible, and hold the breath for about ten seconds. Here again it is necessary that he hold it by closing the glottis and allowing the chest and diaphragm to relax. The examiner notes the fluctuation of systolic pressure until inspiration has begun, and jots down his figures. (In each of the subsequent steps it will be understood that an interval of about ten seconds occurs between the steps, and that the systolic pressure is determined immediately before the subject performs.) The subject next blows against the gauge, the spirometer being cut off by means of the stop-cock, and maintains a pressure of 40 mm. Hg. for about ten seconds. It is essential that this pressure be maintained by chest and diaphragm rather than by the buccal muscles. He is then instructed to inhale against the gauge, the spirometer still cut off, and maintains a negative pressure of 25 mm. Hg. for about ten seconds. He is cautioned to use the chest and diaphragm rather than the buccal muscles. The stop-cock is now opened. The subject is instructed to inspire as deeply as possible and then blow as long as possible through the spirometer, maintaining a constant positive pressure of 20 mm. Hg. throughout the expiration. To do this properly, he must watch the gauge, not the spirometer, and keep the indicator upon the 20 mm. mark. He is required to repeat this performance two more times. The examiner notes the amount expired in each of these three steps. This completes the active part of the technique. The examiner then makes a final determination of pulse rate, systolic and diastolic pressures, and of any changes or accentuation of physical signs.

Thus the technique is divided into nine determinations or "steps": (1) initial notation of physical signs, blood pressure, pulse rate and

rhythm; (2) full inspiration, held; (3) full expiration, held; (4) 40 mm. positive pressure, held; (5) 25 mm. negative pressure, held; (6), (7), (8), expiration to full capacity at a pressure of 20 mm; (9) terminal notation of pulse rate and rhythm, blood pressure, and physical signs. Immediately before each of Steps Two to Eight inclusive, the systolic pressure is determined, in order to obtain an accurate observation of the pressure deviation of each step. No attempt is made to count the pulse rate from step to step, as this would involve the outlay of considerable extra time, allowing the cardio-vascular system to recover to a greater extent between the steps, and needlessly complicating the technique. The examiner, after becoming accustomed to the technique, readily notes any unusual change in pulse rate or rhythm.

CHART 1


Steps two, four
(2) (Full Inspiration, held)
(4) (Expiration against gauge)
(40 mm positive pressure)
Steps three, five
(3) (Full Expiration, held)
(5) (Inspiration against gauge)
(25 mm negative pressure)
5
0
10
20
30
A
B
C
3"
10"
5"
5"
3"
5"
5"
FLUCTUATION OF PRESSURE IN STEPS 2-5.
STEPS 2,4.- Short initial rise, then fall of ten or more points, possibly merging with diastolic. Cessation of effort at A, with rise of pressure. The lowest point is plotted as the reaction.
STEPS 3,5.- Short initial fall, then rise above baseline. Cessation of effort at B, with possible added sharp increase, C, 20 mm above. Then decline to baseline. The highest point is plotted as the reaction.

In order to ascertain the average reaction to the foregoing steps, we first subjected to the test one hundred individuals, male and female, who, in so far as could be determined by the usual methods of examination, had normal cardio-vascular systems. Practically without exception, in every case where we were satisfied that the subject was properly performing, there was a similar reaction to each of the steps. The degree of reaction, as would be expected, varied with the build and physical condition, being greater in the larger, more robust individuals, and in the males. The reaction to the various steps were as follows.

In Step Two, full inspiration held, a condition of increased intrathoracic pressure was produced, due to the pressure of the relaxed chest and diaphragm against the inflated lungs, the expulsion of air from the latter being prevented by the closed glottis. Synchronous with this increased intrathoracic pressure, there was a quick initial rise of systolic pressure, of about 2-3 seconds' duration, averaging 5 mm. Hg.; then a rapid decline of 20 mm. Hg. or more, so that frequently the systolic pressure appeared to merge with the diastolic. As the intrapulmonary air was released, the systolic pressure rose promptly to a point of about 5 mm. Hg. above its original level and then gradually declined. We decided that the pertinent point of the reaction was that of the maximum decline. (Chart I.)

In Step Three, full expiration held, a condition of decreased intrathoracic pressure was produced, due to the suction of relaxed chest and diaphragm against the deflated lungs, the entrance of air to the latter being prevented by the closed glottis. Synchronous with this decrease in intrathoracic pressure we observed an initial decline of systolic pressure, for about five seconds, averaging 5 mm. Hg.; then a gradual rise to a point 5-10 mm. Hg. above the original level. As inspiration began, there was usually an additional quick increase of pressure up to a point of about 20 mm. Hg. above the original level, then a gradual decline to the original. We chose the maximum rise as the pertinent point in this reaction. (Chart I.)

In Step Four, 40 mm. Hg. positive pressure held, a condition of increased intrathoracic pressure was produced. Synchronous with this, the systolic pressure fluctuated as described in Step Two, though usually to a greater degree. The point of maximum decline was chosen as the pertinent point of reaction. (Chart I.)

In Step Five, 25 mm. Hg. negative pressure held, a condition of decreased intrathoracic pressure was produced as in Step Three. We observed likewise a similar fluctuation of systolic pressure, of about the same magnitude. The point of maximum rise was chosen as the pertinent point. (Chart I.)

In Steps Six, Seven, and Eight, expiration to full capacity at a pressure of 20 mm. Hg., a

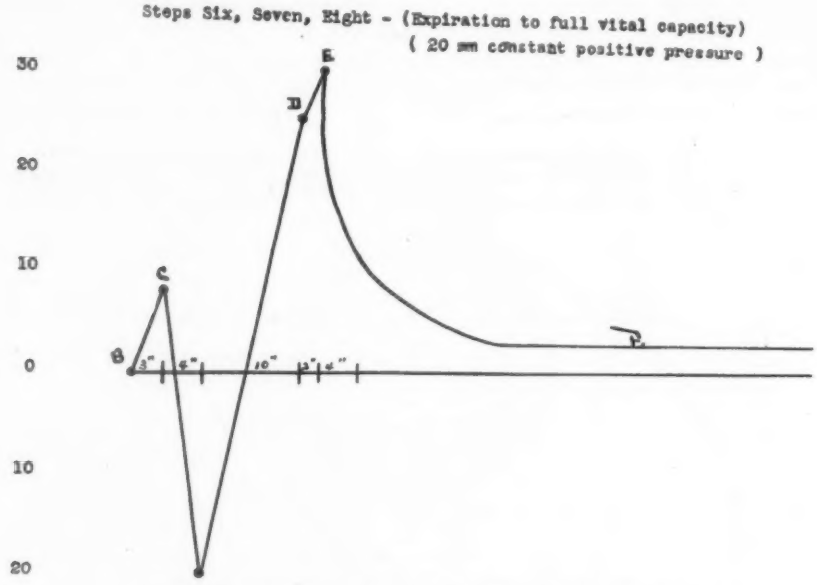
condition of increased intrathoracic pressure was produced and maintained through the greater part of the expiration, though of necessity gradually declining towards the end. We observed a fluctuation of systolic pressure, which, in its early stage, resembled that obtained in Steps Two and Four; a quick initial rise followed by a rapid decline. However, as expiration continued, the systolic pressure began to increase, rising toward the end of expiration to a point 20-40 mm. Hg. above the original level. Frequently, when expiration ceased and inspiration began, there was an added jump of systolic pressure of 5-10 mm. Hg., followed by a decline.—at first rapid, then gradual,—to, or slightly above, the original level. It seemed that the pertinent point in this reaction was that of maximum rise, during or shortly after the expiration. (Chart II.)

We observed that the final systolic pressure taken about one-half minute after the conclusion of Step Eight, was usually 5-10 mm. Hg. above the original level. The pulse rate was apt to be increased 5-10 beats per minute, though in individuals of athletic habits and in good physical condition, it was frequently somewhat diminished.

In order to have a permanent record of the complete reaction, a record which would indicate at a glance the nature and degree of the reaction, we plotted the results in the form of a double curve. In red ink, we plotted the systolic pressure taken before each step, thus forming the "base-line curve." In black ink, we plotted the maximum of deviation above or below the base-line pressure, as was considered pertinent for each step. This gave us the "reaction curve." We eventually devised the blank illustrated in Chart V, which is now used in our Medical Department. On the upper portion of the blank are noted the systolic and diastolic pressures and pulse rates, before and after the active portion of the test (Steps Two to Eight); likewise the amount of air expired (capacity blown) in each of Steps (1) Six, (2) Seven, (3) Eight. The greatest amount expired is noted as the "vital capacity." Below on the right, a space is provided for description of the physical signs. At the left is the chart, ruled in millimeters of mercury, with nine vertical lines, one for each step, as indicated by the numerals at the bottom. A normal reaction has been inserted. On Line One, the original systolic pressure is plotted, forming the starting point of the base-line and reaction curves. On each of the subsequent lines, exclusive of Line Nine, the base-line and reaction pressures of the corresponding steps are plotted and connected to form the respective curves. On Line Nine, the terminal systolic pressure is plotted and connected with the base-line curve.

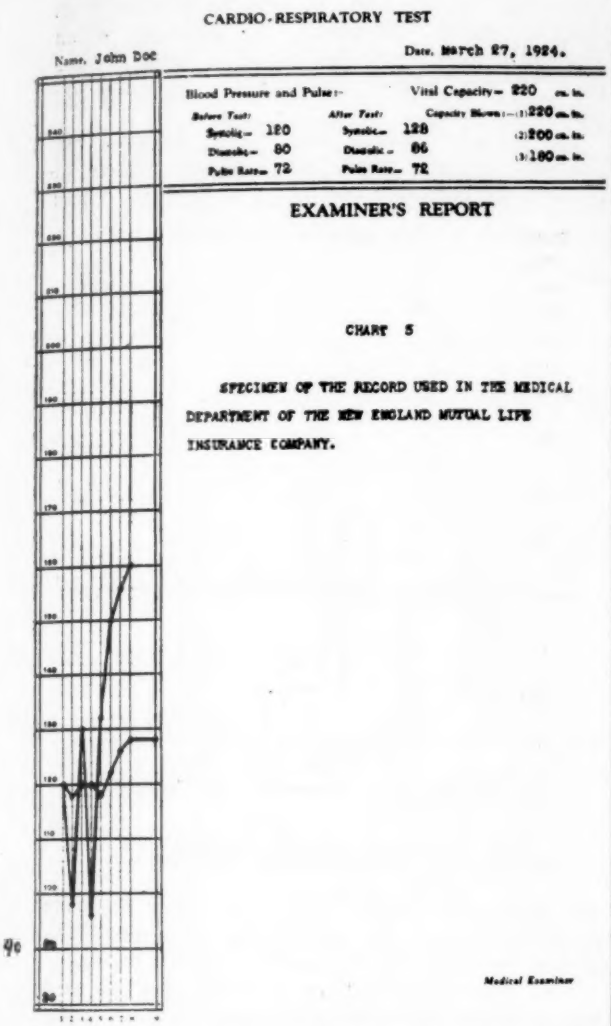
Having subjected one hundred normal individuals to the test, we analyzed the results, obtaining the average curve which is shown in Chart III (the interrupted curve). In addition, we subdivided the one hundred into five groups: those with original pressures from (1) 100-109 mm. Hg.; (2) 110-119 mm. Hg.; (3) 120-129 mm.

CHART 2



Showing fluctuation of systolic pressure in Steps Six to Eight. Point of maximum rise at E taken for plotting reaction curve. Expiration begins at B; a short initial rise B - C; a sharp extensive decline followed by a rise to point D where expiration ceases. Immediately there is a slight, further, rise D - E; thereupon the pressure drops rapidly to a point about 10 mm above the base line, then falls gradually.

Hg.; (4)130-139 mm. Hg.; (5)140 mm. Hg. plus (Chart III). The similarity of the subdivision curves with the average was striking, and tended to confirm our belief that the reaction of normal individuals should conform with this average.


CARDIO-RESPIRATORY TEST

Name, John Doe

Date, March 27, 1924.

Blood Pressure and Pulse:-

Before Test: Systolic— 120 Diastolic— 80 Pulse Rate— 72

After Test: Systolic— 128 Diastolic— 86 Pulse Rate— 72

Vital Capacity— 220 cu. in.

Capacity Blown:—(1)220 cu. in. (2)200 cu. in. (3)180 cu. in.

EXAMINER'S REPORT

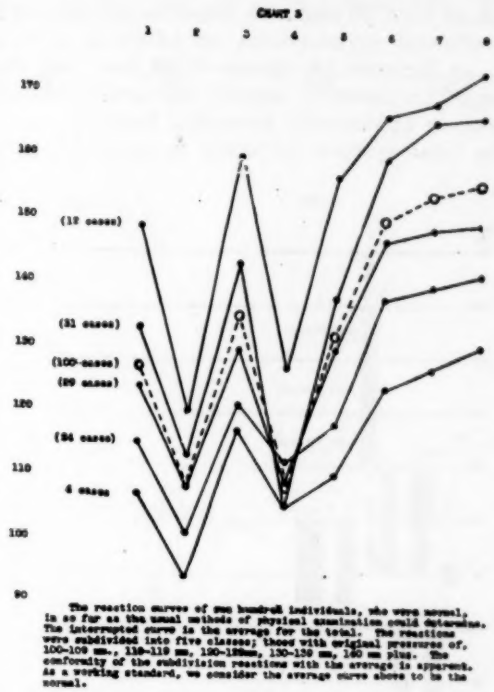
CHART 5

SPECIMEN OF THE RECORD USED IN THE MEDICAL DEPARTMENT OF THE NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY.

Medical Examiner

Up to this point, we had satisfied ourselves that the systolic blood pressure, synchronous with the changes of intrathoracic pressure which this technique produced, fluctuated uniformly and to a very considerable degree. It appeared that this fluctuation could be due only to strain upon the cardio-vascular system, produced in some manner by the changes in intrathoracic pressure. While working upon the normal, we had noted that the response was apt to vary in accordance with build and general physical condition. In the case of a few individuals, with definite cardio-vascular impairments, we had obtained results which did not conform with our idea of the average. We then dared to hope that this test might prove of value in determining the cardio-vascular function. If so, experience had already proved that it would fulfill all our requirements, which have been previously stated. We then determined to enter upon the second phase of the investigation; to apply the test to such individuals with cardio-vascular impairments as came within our sphere of influence in the ordinary run of Life Insurance examinations.

It is beyond the scope of this paper to dwell upon these later results in more than a general way. We have subjected to the test about eight hundred individuals who presented signs of cardio-vascular impairment. These impairments included heart murmurs, organic and not organic, enlarged and irregular hearts, tachycardias, hypertensions, hypotensions, and



The reaction curves of one hundred individuals, who were normal, in so far as the usual methods of physical examination could determine. The interrupted curve is the average for the total. The reactions were subdivided into five classes; those with original pressures of, 100-109 mm., 110-119 mm, 120-129mm, 130-139 mm, 140 mm plus. The conformity of the subdivision reactions with the average is apparent. As a working standard, we consider the average curve above to be the normal.

goitres. By analysis of the rapidly accumulative results in these cases, we have gradually revised somewhat our original conception of the normal response to the test, and have become fairly convinced that there are certain types of reactions which are distinctly abnormal.

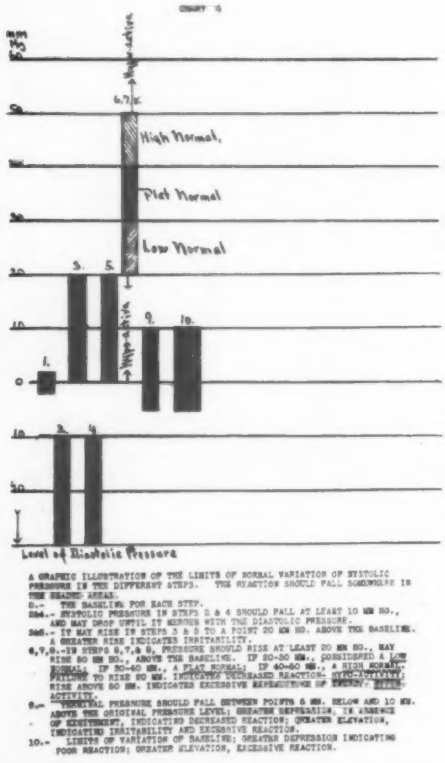
In Chart IV, I have indicated in graphic form our present conception of the limits of normality for each of the steps. We believe that the systolic pressure in Steps Two and Four should fall at least 10 mm. Hg. and that it may decline to such a degree that it practically merges with the diastolic pressure. We have as yet no valid reason for insisting that a failure to decline more than 10 mm. Hg. is abnormal. We know that such failure is not frequent, and have a certain amount of evidence, by no means conclusive, that it is more apt to occur with individuals who have more or less rigid arterial systems with increased diastolic pressures and abnormally powerful hearts. We have observed that the tendency of the systolic pressure to

merge with the diastolic is more apt to occur in young adults.

In Steps Three and Five, we believe that the systolic pressure should not rise more than 20 mm Hg. above the base-line, any excess indicating an irritable, overacting cardio-vascular system.

In Steps Six, Seven, and Eight, we expect the rise to be at least 20 mm. Hg. above the base-line, and not to exceed 50 mm. An increase to a point of 20-30 mm. above, we consider a "low" normal response; 30-40 mm. above, a "flat" normal response; 40-50 mm. above a "high" normal. Types of these three grades of normal response are shown in Chart VI. Failure to increase at least 20 mm., we consider an indication of weakened myocardium or valvular obstruction; an increase in excess of 50 mm., an indication of an irritable, overacting cardio-vascular system, or abnormally powerful heart.

The final systolic pressure is expected to lie



A GRAPHIC ILLUSTRATION OF THE LIMITS OF NORMAL VARIATION OF SYSTOLIC PRESSURE IN THE DIFFERENT STEPS. THE REACTION SHOULD FALL SOMEWHERE IN THE SHADED AREAS.

0.— THE BASELINE FOR EACH STEP.

2&4.— SYSTOLIC PRESSURE IN STEPS 2 & 4 SHOULD FALL AT LEAST 10 MM HG., AND MAY DROP UNTIL IT MERGES WITH THE DIASTOLIC PRESSURE.

3&5.— IT MAY RISE IN STEPS 3 & 5 TO A POINT 20 MM HG. ABOVE THE BASELINE. A GREATER RISE INDICATES IRRITABILITY.

6,7,8.—IN STEPS 6,7,& 8, PRESSURE SHOULD RISE AT LEAST 20 MM HG., MAY RISE 50 MM HG., ABOVE THE BASELINE. IF 20-30 MM., CONSIDERED A LOW NORMAL; IF 30-40 MM., A FLAT NORMAL; IF 40-50 MM., A HIGH NORMAL. FAILURE TO RISE 20 MM. INDICATES DECREASED REACTION; HYPOACTIVITY. RISE ABOVE 50 MM. INDICATES EXCESSIVE REFLEX ACTION OF ENERGY; HYPERACTIVITY.

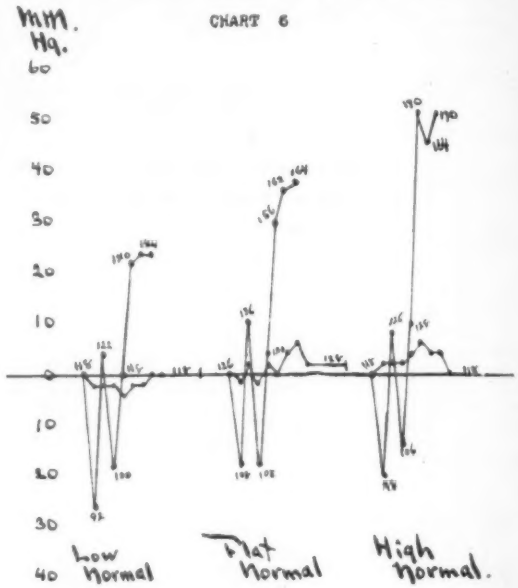
9.— DIASTOLIC PRESSURE SHOULD FALL BETWEEN POINTS 5 MM. BELOW AND 10 MM. ABOVE THE ORIGINAL PRESSURE LEVEL; GREATER DEPRESSION, IN ABSENCE OF EXCITEMENT, INDICATING DECREASED REACTION; GREATER ELEVATION, INDICATING IRRITABILITY AND EXCESSIVE REACTION.

10.— LIMITS OF VARIATION OF BASELINE; GREATER DEPRESSION INDICATING POOR REACTION; GREATER ELEVATION, EXCESSIVE REACTION.

within the limits of 5 mm. below, and 10 mm. above the original level. Any greater decline we consider an indication of cardio-vascular weakness, provided the evidence does not point to hypertension from excitement. An increase above these limits, we consider an indication of excessive response.

As regards the base-line, a certain amount of fluctuation up and down is expected from step to step. However, this should not exceed the limits of 5 mm. below, and 10 mm. above, the original level; any excess indicating irritability. We look askance at a base-line which, tending to fall from step to step, terminates at a level of 10-15 mm. below the original, believing it an indication of weakness, unless as before mentioned there is evidence of excitement or apprehension. In such a case, it is not unusual for the systolic pressure, abnormally elevated at the beginning of the test, to decline gradually as the excitement subsides. A base-line which gradually rises, terminating at a level greater than 10 mm. above the original, indicates excessive response.

As already stated, we have observed repeatedly certain types of response, which at present we consider distinctly abnormal. These



TYPES OF THE LOW, FLAT AND HIGH NORMAL REACTIONS IN STEPS SIX, SEVEN AND EIGHT. SEE CHART 4.

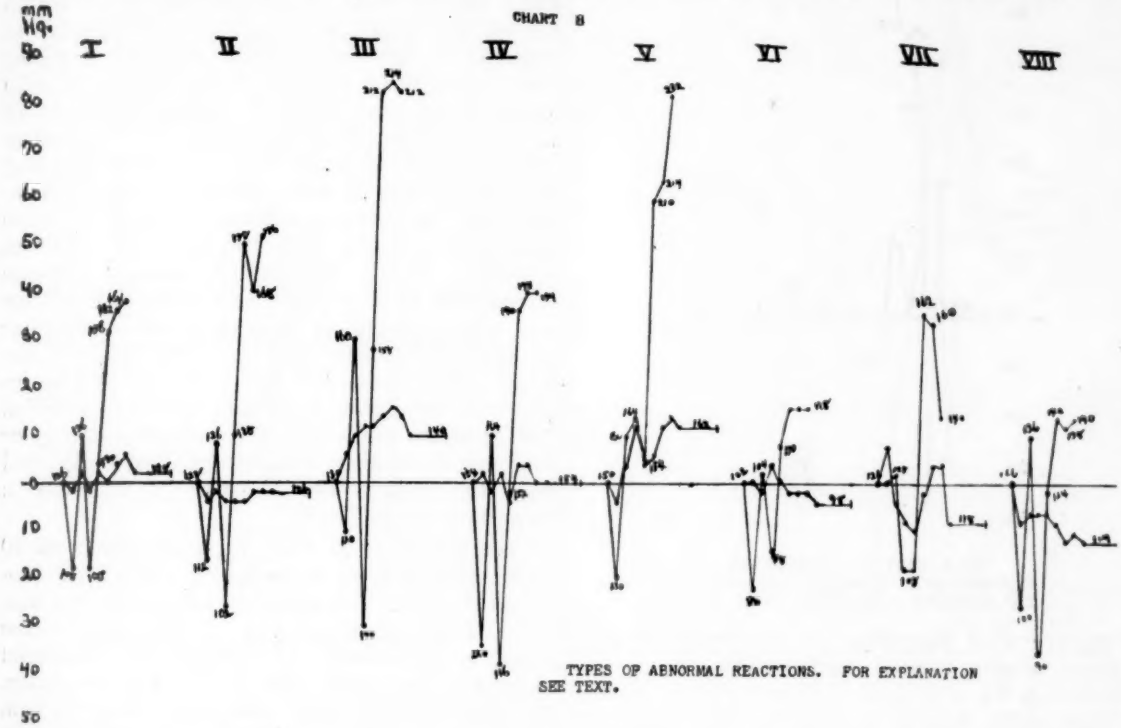
are shown in Chart VIII. In order to make clear the reasons for considering them abnormal, it will be advisable to discuss each in detail.

The first reaction is a normal, inserted as a standard for comparison.

Reaction II is that of a salesman of 41 years, and underweight (5 ft., 5 in.—117 lbs.); chest girth 32½ in.; expansion, 3 in.; vital capacity, 210 cu. in.; abdominal girth, 31 in. There was a trace of sugar in his urine. There was a systolic murmur heard over the whole precordia, transmitted to the left axilla. A diagnosis of mild mitral regurgitation was made. Before the test his pressure was: S-128, D-74; after, S-126, D-78; pulse pressure was reduced 8 mm. Hg., an amount not considered abnormal. The pulse rate was 66 before and after. The base-line is steady. The only significant feature about this reaction is the slight excessive response in Steps Six and Eight; 54 mm. in each (upper normal limit, 50 mm.). This constitutes in our terminology a mildly hyperactive reaction.

Reaction III is that of a contractor-builder of

31 years, somewhat over weight (5 ft., 6 in.,—170 lbs.); chest girth 40 in.; expansion, 3 in.; vital capacity, 285 cu. in.; abdominal girth, 36½ in. The only abnormal cardio-vascular sign was a mild tachycardia; pulse rate, 92. Before the test his pressure was, S-130, D-80; after, S-140, D-100. The pulse pressure was reduced 10 mm., bordering upon abnormality. The pulse rate after the test was 112, an increase of 20 beats. The base-line rises progressively, attaining in Step Seven a point 16 mm. above the original level (normal upper limit 10 mm.). In Steps Six, Seven, and Eight, the pressure rises to 212 mm., 214 mm., 212 mm., respectively; 68 mm. above the base-line (upper normal limit, 50 mm.). Summarizing, we note a decrease in pulse pressure, a marked increase in pulse rate, an abnormally elevated base-line and an excessive reaction in the three final active steps. We interpret this to indicate a cardio-vascular system so irritable or unstable that it responds to strain with an excessive expenditure of energy. In other words, the reaction is markedly hyperactive. (Compare with Reaction II: a mild hyperactivity.)

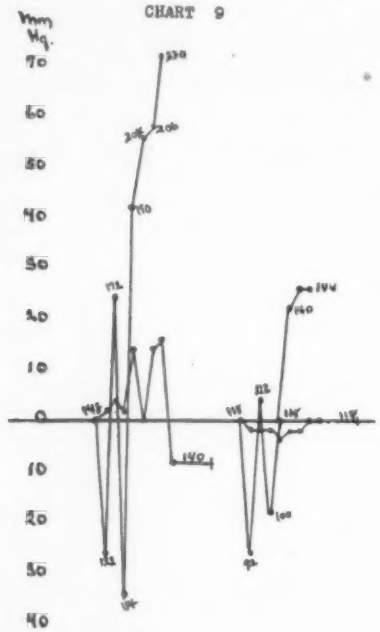


TYPES OF ABNORMAL REACTIONS. FOR EXPLANATION SEE TEXT.

Reaction IV is that of an architect of 40 years, somewhat under weight (5 ft., 10 in., 144 lbs.); chest girth, 33 in.; expansion, 3 in.; vital capacity, 225 cu. in.; abdominal girth, 28 in. There was a systolic murmur at the apex, transmitted to the axilla, with slight hypertrophy. A diagnosis of mild mitral regurgitation was made. Before the test his pressure was, S-154 D-78; after, S-154, D-90; a mild hypertension The pulse pressure decreased 12 mm., bordering upon abnormality. The pulse rate was 87 before the test; after, 100; an increase of 13 beats. The base-line is fairly steady. The reaction curve conforms in amplitude with the normal. Were it not for the decrease in pulse pressure, and increase in pulse rate, we should interpret this reaction to indicate a cardio-vascular system, constantly subjected to a mild overload, which resists strain with an adequate expenditure of energy. As it is, we believe it falls just short of doing so. Lacking the two minor defects, we should designate this a typical hypertension reaction.

Reaction V is that of an accountant of 52 years, somewhat over weight (5 ft., 11 in.,—191 lbs.); chest girth, 40½ in.; expansion, 3 in.; vital capacity, 205 cu. in.; abdominal girth, 38½ in. The heart was somewhat enlarged. Before the test his pressure was, S-150, D-100; after, S-164, D-100; a mild hypertension. The pulse pressure increased 14 mm. The pulse rate was 84 before the test; after, 96; an increase of 12 beats. The base-line is quite unsteady, rising 14 mm. above the original level in Step Four, and elevated 12 mm. at the end of the reaction. As for the reaction curve, it will be noted that in Step Four an increase of pressure (2 mm.) is recorded, rather than the expected decrease. Inasmuch as the proper decrease was obtained in Step Two, this is obviously an error of technique, due to the inability of the subject to perform properly. Incidentally, this illustrates the reason for incorporating duplicate Steps (Two and Four; Three and Five). If the proper fluctuation is

not obtained in one, it will be obtained almost invariably in the other. In Steps Six, Seven and Eight, the pressure soars far above the normal limits; 210 mm., 214 mm., 232 mm. Summarizing, we note an original mild hypertension; an increased pulse pressure; an increased pulse rate; an unsteady, abnormally elevated base-line; an excessive response in the three final active steps. We interpret this, as in the case of Reaction III, as indicating irritability of the cardio-vascular system with excessive response to strain; marked hyperactivity.



THIS CHART ILLUSTRATES THE TENDENCY OF EXCITEMENT TO EXAGGERATE THE RESPONSE. SEE TEXT.

(Compare with Reaction IV; a similar degree of hypertension, almost normal response.)

Reaction VI is that of a salesman of 38 years, of practically normal weight (5 ft., 7 in., 160 lbs.); chest girth, 34 in.; expansion, 3½ in.; vital capacity, 140 cu. in. (abnormally low); abdominal girth, 35 in. The only abnormal circulatory finding was hypotension; S-102, D-68, before the test; after, S-98, D-68. The pulse pressure decreased 4 mm., not considered abnormal of itself. The pulse rate was 70, before and after. The base-line is steady, with a slight tendency to fall. As for the reaction curve, in Steps Six, Seven and Eight, the pressure rises only 18 mm. above the base-line (low normal limit, 20 mm.). Summarizing, we note a low vital capacity; hypotension; a slight decrease in pulse pressure; a base-line tending to fall; a low response in the three final active steps. We interpret this as an inadequate resistance to strain; in our terminology, hypoactivity. We expect to find this type of reaction in cardio-vascular asthenia, myocarditis, a large proportion of mitral stenoses. We find it frequently in individuals excessively over weight, fat, with flabby skeletal musculature and presumably flabby myocardium.

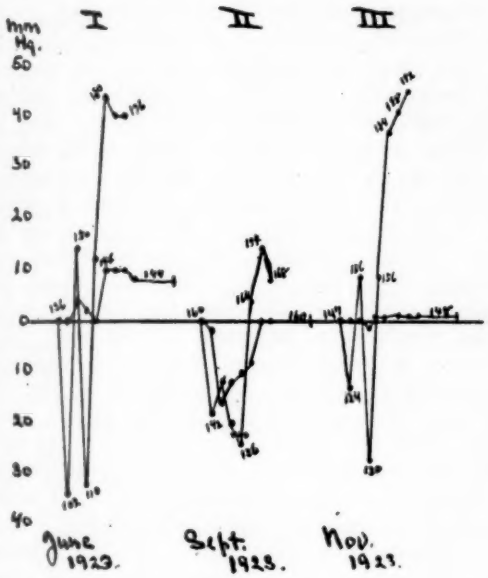
Reaction VII is that of an executive of 44 years, slightly over weight (5 ft., 9 in.—174 lbs.); chest girth, 40 in.; expansion, 3 in.; vital capacity, 270 cu. in.; abdominal girth, 37 in. The only circulatory impairment was an irregularity of heart action, due to extra-systole. The pressure before the test was, S-126, D-78; after, S-118, D-88. The pulse pressure decreased 18 mm.; an abnormal amount. The pulse rate before the test was 80; after, 84. The base-line is unsteady, tending to fall, remaining at the end of the test 8 mm. below the original level. The reaction curve is atypical. In Steps Two and Four the decrease of pressure is barely within normal limits (10 mm.). In Step Five, a fall of pressure is recorded, rather than the expected rise; apparently due to faulty technique. In Steps Seven and Eight, a marked tendency of the pressure to fall is apparent, the response in Step Eight being only 10 mm. (response in Six, 38 mm.; Seven, 30 mm.; Eight, 10 mm.). Summarizing, we note a marked decrease in pulse pressure; a slight increase in pulse rate; an unsteady, falling base-line; a marked decrease in response in the three final steps. We interpret this reaction as indicating cardio-vascular weakness; hypoactivity. As compared with Reaction VI, we consider that both indicate an inadequate resistance to strain, but that Reaction VII presents the additional defect of a greater tendency to weaken during the strain; deduced from the progressive decrease of response in Steps Seven and Eight.

Reaction VIII is that of a merchant of 40 years, with a vital capacity of 105 cu. in. (abnormally low). The pressure before the test was, S-126, D-70; after, S-114, D-76. The pulse pressure decreased 18 mm.: an abnormal amount. The pulse rate before was 60; after, 72. The base-line falls definitely, being 12 mm. below the original level at the end. The reaction curve is normal, the response in the three final active steps coming within our low normal limits. This reaction presents a low vital capacity; a decreased pulse pressure; an increased pulse rate; a definitely falling base-line. It represents another type of hypoactivity, more nearly approaching the normal than Reaction VI and VII; indicating a lesser degree of cardio-vascular weakness.

Analyzing these reactions as a whole, it is apparent that they fall into certain main groups. There is first the normal reaction with a normal initial blood pressure and pulse rate; with a normal vital capacity; with a pulse pressure, preferably increasing, but not decreasing more than 10 mm.; with a steady base-line and pulse rate; with a reaction curve confined to the normal limits (Chart IV). Then comes the hyperactive reaction, indicated by various com-

binations of an unsteady, abnormally elevated base-line; an increasing pulse rate; excessive reaction in Steps Three, Five, Six, Seven, Eight; decreased pulse pressure. Next, comes the hypoactive reaction; indicated by combinations of a low vital capacity; decreased pulse pressure; increased pulse rate; falling base-line; inadequate response in Steps Six to Eight; decreasing response in Steps Seven and Eight. Finally comes the hypertension reaction, with an initial hypertension, but in other respects conforming with the normal. In addition, evidence of erratic response, such as the intervention of abnormalities of rate, rhythm, or force of cardiac contractions would be noted: instances of these

CHART IO



ILLUSTRATING THE EFFECT OF FATIGUE. SEE TEXT.

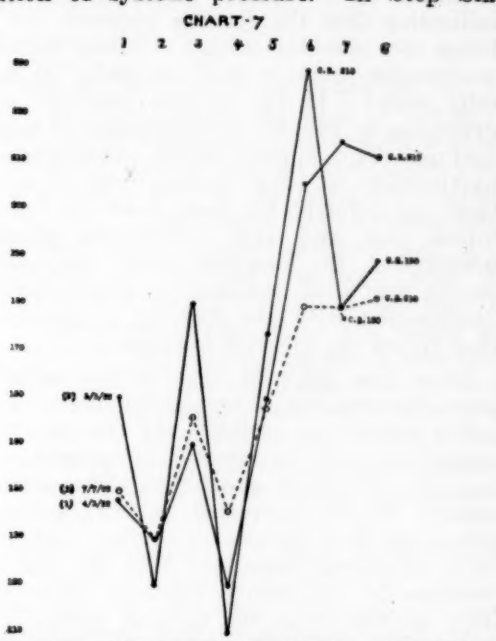
in our experience have been paroxysmal tachycardia; temporary block; development of extra-systoles, or increase in frequency of initial extra-systoles; tonal arrhythmia.

There is no doubt that excitement or apprehension will tend to exaggerate the response to this test. In Chart IX are given two reactions of an individual of 36 years, taken five days apart. The first is definitely hyperactive. The pulse pressure decreased 10 mm. The pulse rate, originally 90, increased 24 beats. As the excitement was perfectly apparent, another reaction was taken 5 days later. It was quite normal. The pulse pressure increased 2 mm., while the pulse rate remained the same. We take pains to check up hyperactive reactions whenever we consider it possible that excitement or apprehension have prevailed.

In Chart X is illustrated the effect of fatigue upon the reaction. The individual in question is a busy executive of 66 years, who is subject to severe mental strain. The first reaction was taken in June, 1922. It is a vigorous, normal reaction. The second was taken in September, 1923, prior to departure on several weeks' vacation. There was no question that the subject was fatigued from long continued, intense application. His reaction, II, was definitely hypoactive. Immediately upon his return from vacation, the third reaction was taken, which is again a vigorous normal.

In Chart VII are shown three reaction curves of a case originally diagnosed as hypertrophy, with a systolic murmur at the apex. The reaction in Curve Three reveals an unusually wide fluctuation of systolic pressure. In Step Six

CHART-7



This applicant, when examined on March 3, presented a heart slightly enlarged to percussion, a systolic murmur at the apex, and the reaction of Curve Three. The wide variation of systolic pressure is striking. In Step Six it reached 230 mm. Hg. In Steps Seven and Eight it was deemed inadvisable to push the pressure so far; the capacity required was reduced. Curve One gives the reaction one month later; Curve Two, four months later. This conforms with the normal. The abnormal physical signs had disappeared, under treatment. C. B. indicates the capacity in cubic inches blown through the spirometer.

this rose to 230 mm. Hg. In the next two steps the subject was not permitted to blow to so great a capacity, with the result that the systolic pressure did not rise as high. Curve One represents the reaction one month later. During the interval the subject had carefully followed instructions as to the regulation of his habits, the amount of work, sleep, exercise, etc. At this examination, the systolic murmur was much less apparent. There was no demonstrable enlargement of the heart. Curve Two represents the final reaction four months after the original examination. At this time, the systolic murmur had entirely disappeared and no enlargement of the heart could be demonstrated. It will be noted that this curve conforms with the normal.

In practice, the technique of this test has proved easy of application. It has been acquired by about fifty of our examiners with but

little difficulty. The fluctuations of pressure are rather rapid. To follow them accurately, considerable facility in the use of the manometer bulb and the release valve is necessary. After a little experience, the examiner knows intuitively the direction in which the pressure will fluctuate and will follow it more alertly. It is not necessary to follow the variation in each step throughout its entirety. In Steps Two and Four, the pertinent reaction is a decline of pressure. No attempt should be made to follow the initial rise. With the pressure in the cuff at the base-line level, the examiner waits until the sound has disappeared, indicating that the systolic pressure has fallen below the base-line level. He then releases the manometer pressure until he picks up the systolic sound. If the systolic pressure is still dropping, he follows it to the point of maximum decline. This applies to the other steps, most particularly to Six, Seven, and Eight. In these, no attempt has been made to follow the initial rise and fall. With the manometer pressure at the base-line level, the examiner should wait until the systolic sound, which has disappeared with the decline, re-appears, and then follow the increase to its peak.

From the point of view of the subject, we have observed no objectionable features. The entire technique, exclusive of the physical examination, requires about 7-10 minutes, including the necessary coaching. The subject is usually deeply interested in the various performances and curious as to their significance. It is, of course, necessary that the manometer pressure be completely released between each step, as otherwise the subject would become acutely uncomfortable toward the end of the test from the constriction of his arm. There have been no serious sequelae. One individual, who had been gassed in the World War, developed a transient precordial pain. The test was, of course, immediately discontinued. Several have developed irregularities of rhythm and tone, which promptly disappeared. Two have developed an apparent temporary heart block without symptoms, the pulse decreasing in rate by one-half in each case, and in each resuming its original rate in about thirty seconds. These developments we considered abnormal. The test should not be applied to individuals with a history of angina pectoris or severe attacks of tachycardia. We are particularly careful in cases of advanced hypertension, rarely applying it if the systolic pressure exceeds 180 mm. Hg. In such cases it would be quite possible to induce a cerebral hemorrhage.

The degree of coöperation on the part of the subject varies of course with his mentality, and, in addition, very largely with his proficiency in physical exercises. In Step Two, over half our subjects have performed properly, naturally, without coaching. A few apparently could not hold their breath by closing the glottis. They maintained full inspiration by keeping the chest expanded and the diaphragm depressed. Under these conditions, as soon as the act of inspiration had ceased, the intrapulmonary pressure approximated the atmospheric, and the necessary increase in intrathoracic pressure was impossible. This did not matter particularly, as the proper increase of intrathoracic pressure could usually be produced in Step Four, by blowing against the gauge. We have encountered the greatest difficulty in Steps Three and Five. In the former, the tendency seems to be to maintain full expiration by continued contraction of the chest and diaphragm rather than by closing the glottis and allowing the chest and diaphragm to relax. In such a case the necessary decrease in intrathoracic pressure is not forthcoming. In Step Five, the subject is apt to maintain a 25 mm. Hg. negative pressure by buccal suction. It is frequently impossible to teach the subject to do these steps properly. However, the information which we obtain from them relates entirely to the question of cardio-vascular stability. This information, as already noted, may be gleaned from other elements of the reaction. It will, perhaps, be found advisable to eliminate these two steps. In Step Four, the examiner must be sure that the subject, after having attained a pressure of 40 mm. Hg., maintains it by continued chest and diaphragmatic exertion and not by buccal pressure. In Steps Six, Seven, and Eight, the subject must be cautioned not to exceed a pressure of 20 mm., as the natural tendency is to begin expiration too vigorously. In approximately 1000 applications of this test, it has happened but a very few times, not over ten, that a subject, because of mental or physical inaptitude, so failed to cooperate that his reaction was useless.

From our point of view, which presumably coincides in this respect with the clinical, we wish to know if a given cardio-vascular system will react to strain with a normal, natural outlay of power and without the intervention of abnormalities of cardiac rate, rhythm or force of contractions which might indicate a deranged neuro-muscular mechanism. The system which responds erratically, weakly, or with energy in excess of that demanded by the amount of strain applied, which bears a continuous overload, must be considered abnormal.

We believe that this test, which we term the "cardio-respiratory test," is of very considerable value in determining these factors, in estimating cardio-vascular function; that it applies a strain which may be measured, controlled, increased or decreased as the physical condition of the subject may require, and duplicated, as regards the degree of severity, at subsequent applications; that the reaction may be so recorded graphically that comparison with subsequent reactions is made with the greatest

ease; that it is easily learned, not wasteful of time, not difficult or objectionable for the subject.

We have applied it to normal individuals and to a large group with border-line pathological impairments, with results which have inspired our confidence. We believe a more decisive trial of its merits may be made by application to a group with definitely pathological cardio-vascular impairments, under clinical conditions which would permit comparison of the reaction, from time to time, with obvious improvement or deterioration of cardio-vascular function. Such a trial we shall most heartily welcome.

THE REACTION OF THE DIASTOLIC PRESSURE TO RESPIRATORY STRAIN

BY H. H. AMIRAL, M. D., BOSTON, MASS.

Medical Examiner, New England Mutual Life Ins Co.

THIS is a preliminary study of the reaction of diastolic pressure of normal persons to respiratory strain of short duration.

The technique used in this study is that adopted and described by Dr. Harold M. Frost, and which appears elsewhere in this issue. I have made practical application of this technique on many cases in the past two years. During this time I have often noticed that at times as the systolic pressure fell, the diastolic rose at the same time and at other times as the systolic rose, there would be, a few seconds later, what looked like a compensatory drop in the diastolic pressure. This is an observation, which, as far as I know, has not been made before. I then noted on a few cases the following observations:

(1) Systolic and diastolic pressures were taken and noted.

(2) In Step Two of the test, when the subject holds his breath in full inspiration, with increased positive pressure in the chest, the systolic pressure would fall from 10-30 points, and at this time the diastolic pressure would rise from 10 points upward, and very often the two would merge so that no sound could be heard. The highest point reached by the diastolic was noted.

(3) In Step Three when the subject held his breath in full expiration, with increased negative pressure, there would be a rise in the systolic pressure, and following this, within 10-15 seconds, there would be a drop in the diastolic pressure of 4-10 points, with a gradual returning to normal. The lowest point reached by the diastolic was noted.

(4) With the subject blowing against a pressure gauge, the findings were essentially a repetition of Step Two, and the highest point reached by the diastolic pressure was noted.

(5) In Step Five, with the subject breathing in through the pressure gauge, causing an increased negative pressure, the findings were a repetition of Step Three.

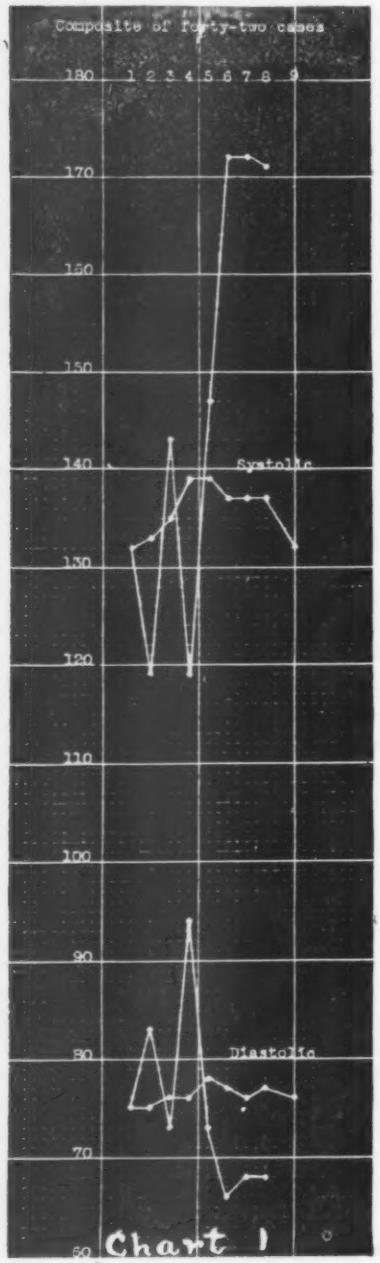
(6) (7) (8) In these last three Steps, on full expiration to determine vital capacity of lungs, at first there was a marked fall in the systolic pressure attended by a rise in the diastolic pressure, followed in a short time by a marked rise in the systolic pressure, with a gradual falling of the diastolic pressure, so that about 10-15 seconds after the maximum systolic pressure had been reached, the diastolic pressure would be anywhere from 5-10 points lower than at the beginning of the Step. The lowest excursion of the diastolic pressure was then noted. These points were then charted along with the points ordinarily charted in the systolic curve. The curve of the diastolic reaction then showed that the diastolic pressure varied inversely to the systolic pressure.

We then determined to make a further study of the diastolic reaction in order to confirm these findings or otherwise. A group of forty-two second-year medical students were taken and were put through this test. Dr. Frost kindly assisted me in these observations. The variations of the systolic pressure were noted by Dr. Frost on the right arm of the subject. The variations of the diastolic pressure were noted by me, using the left arm of the subject, and the maximum or minimum characteristic range of the systolic and diastolic pressure of each step were noted by us. Chart One is a composite study of the forty-two cases. The majority of individual charts conform in a general way to this chart. A few of the subjects were not able to go through the various steps in a satisfactory way, so that their charts were atypical, but these findings are also incorporated in Chart One. It will be noted that the diastolic curve is the inverse of the systolic curve.

I then took a group of twenty young men, apparently in good health, and made a further study as follows:—First, the subject went through the test in the regular manner, with this variation:—Each step consumes exactly fifteen seconds. Observations of the systolic pressure were made as follows:

(*a*) Preliminary observation.

(*b*) An observation as near mid-way during the step as possible.
(*c*) An observation at the completion of the step.
(*d*) An observation seven or eight seconds after the completion of the step.
(*e*) An observation fifteen seconds after the completion of the step.



In other words, four observations were made in the fifteen seconds consumed by the respiratory exertion and the fifteen seconds following. These points were noted and charted for each step.

Then the subject returned within one-half to two hours and went through the same process. This time the diastolic pressure was noted and charted. The charts were then compared. While the systolic and diastolic pressures were not taken simultaneously, they were taken on the same subjects, using the same arm, the same blood pressure apparatus, the same time intervals, and the observations were made by the same observer. Therefore, it seems fair to compare these charts.

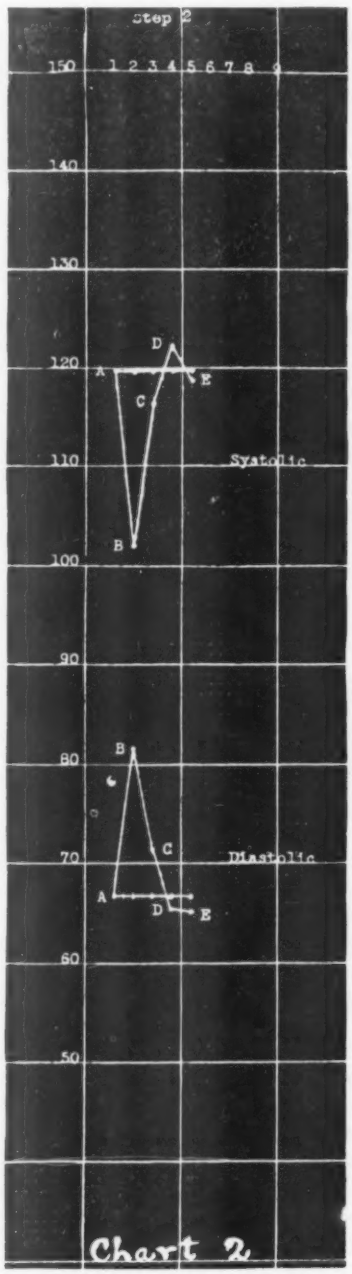
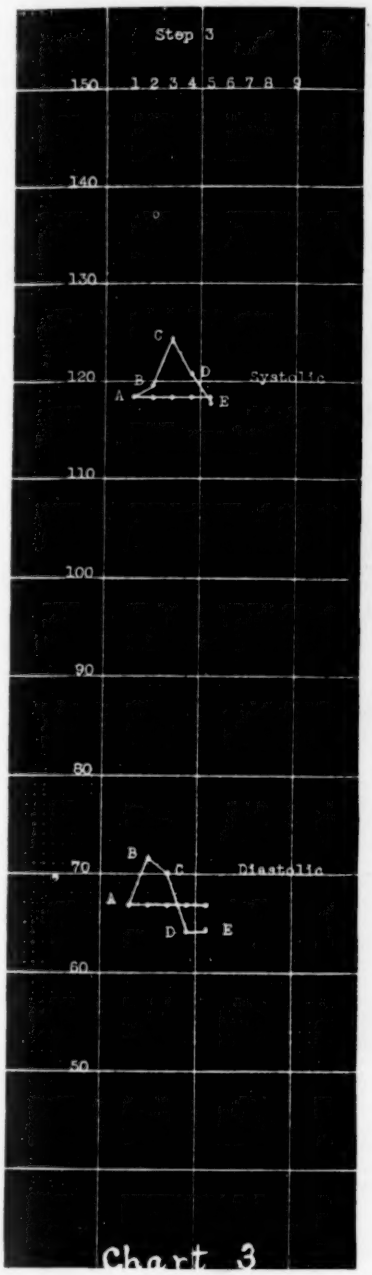


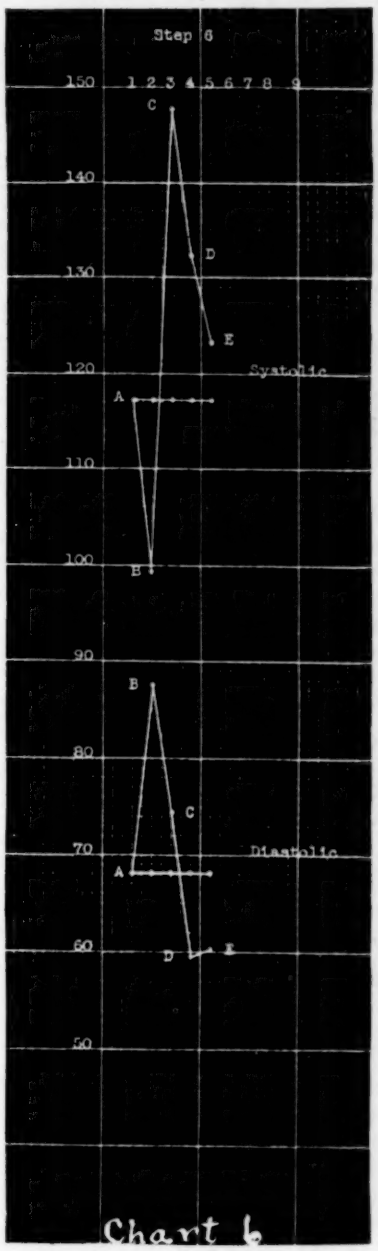
Chart Two is a composite of the reactions in Step Two. At B, the systolic pressure fell and was accompanied by a simultaneous rise in the diastolic pressure. I might add that if an observation were taken two or three seconds after the beginning of the step, there would be at first a preliminary rise in the systolic pressure, later

followed by a drop to B. At point C, the systolic pressure was rapidly rising and the diastolic rapidly falling at the same time. This point is difficult to determine accurately as the change is so rapid at this time. At point D, the systolic pressure is somewhat above the base-line, and the diastolic is somewhat below the



base-line. At point E, the systolic has dropped back to the base-line and the diastolic is still below the base-line, the return to normal being somewhat more gradual. The highest point reached by the diastolic pressure seems to be the most characteristic of this step and is adopted as the point to record.

Chart Three is a composite of the reactions to Step Three. At B, the systolic pressure is somewhat slightly above the base-line, having previously dropped to a few points below the base-line. This does not show in the chart as this occurs within two or three seconds. The diastolic at B has risen, but to a greater extent than the systolic. At C, the systolic pressure has reached its maximum rise, and the diastolic



pressure is beginning to fall. At D, the systolic is gradually coming down to the base-line and the diastolic is below the base-line. At E, the systolic is back to normal, and the diastolic is still below the base-line and comes back gradually to the normal within fifteen seconds, although this is not charted. The lowest point reached by the diastolic pressure seems most characteristic of this step, and is adopted as the point to record.

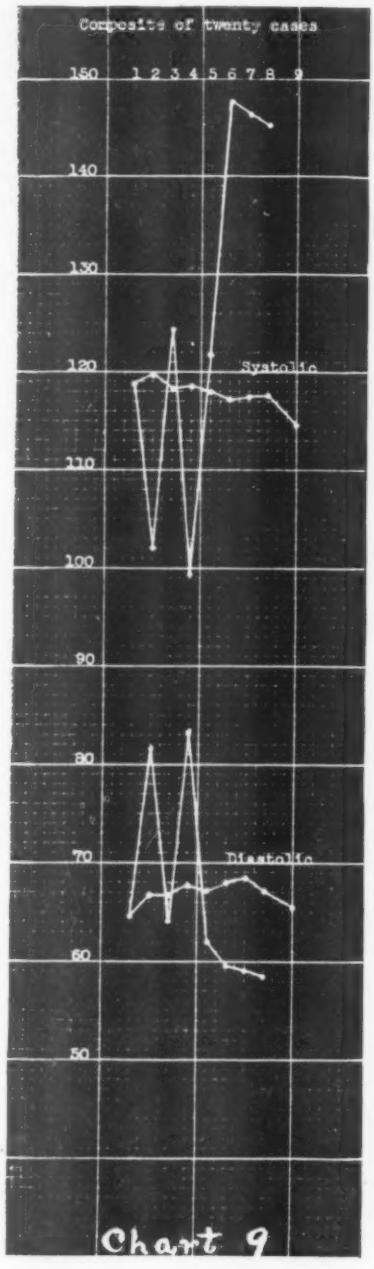
Chart Four is a repetition of Chart Two. (Omitted.)

Chart Five is a repetition of Chart Three. (Omitted.)

Charts Six, Seven, and Eight are practically alike.

At B, there is a marked fall in the systolic pressure, attended by a rise in the diastolic pressure. At C, the systolic pressure has reached its maximum height, and the diastolic pressure has rapidly fallen, although it has not yet reached the original diastolic pressure. At D, the systolic pressure has fallen. In some subjects this fall is rapid, in others it is gradual. The diastolic pressure has also fallen to about eight points below the base-line. At E, the systolic pressure is still gradually falling, and the diastolic pressure remains eight to ten points below the base-line. I have noted that the diastolic pressure comes back gradually to the normal within fifteen to thirty seconds and always much later than the systolic pressure. The lowest point reached by the diastolic pressure seemed to be the most characteristic of these steps, and is adopted as the point to record.

Chart Nine is a composite of these twenty cases for the whole of the test, the points charted being those which seem most characteristic of each step. It will be noted that the diastolic curve is an inverse of the systolic curve.



CONCLUSIONS

This is a preliminary study on normal cases. This group of normal cases shows that

(1) During short respiratory exertion the diastolic pressure, with a few exceptions, varies inversely with the systolic pressure.

(2) During, and as a result of, short respiratory exertion, the diastolic pressure varies to a greater extent than usually understood.

Further study is being made on border-line circulatory cases, and it is hoped that a continued study of the systolic and diastolic pressure, using Dr. Frost's technique, will be of some help in these cases.

THE CHRONIC INTESTINAL INVALID: IX. DIETARY TREATMENT*

BY JOHN BRYANT, M. D., BOSTON

GENERAL CONSIDERATIONS

WHAT is indicated by the title Chronic Intestinal Invalid? Some idea may be gained by reference to previous publications by the writer.

In brief, this title is used to describe a large class of persons, never well, but never seriously ill. Complaint is mostly of two groups of disabilities,—stomach trouble and nerves.

Physically, these sufferers may be of any body type from the short-fat to the long-skinny variety. Those most in need of being helped to a more efficient utilization of what energy they may have, are however usually of hyposthenic or asthenic habitus.

Individual symptoms are as varied as the colors of the spectrum, but group around increased nervous irritability, abnormal bowel function, and chronic fatigue.

*Read in part before the Section of Gastro-Enterology, American Medical Association, Chicago, June 13, 1924. This is the ninth paper on this subject by the author.

Examination may reveal focal infection, endocrine irregularities, visceroptosis with poor body function, faulty personal or dietary habits, or other findings singly or in combination; all of these will require intelligent consideration, on the principle of relieving the camel from a few of the last straws, any one of which may break its back.

One finding will however if looked for be found present, on roentgen examination with opaque enema, in 75% or more of all cases of the type under consideration. This finding is ileal regurgitation.

Incompetence of the ileo-caecal valve-sphincter mechanism permits of a back-flow of septic caecal contents into what should theoretically be, and in really healthy persons actually seems to be the clean absorptive area of the terminal ileum.

Ileal regurgitation is not a condition which can be adequately and permanently glossed over by the prevailing medical attitude of indifference and neglect. On the basis of 14 years of intensive clinical observation, the writer states, with a conviction born of the uniformly good results obtainable through adequate dietary treatment, that ileal regurgitation is a very real clinical actuality and entity. Moreover, there is good reason to state that it is a causal factor in the production of systemic effects which, if less tangible for example than those from an acute appendix, yet are infinitely more widespread and more subtle, resulting not in immediate mortality but in ultimate reduced efficiency of the entire organism.

If there be any virtue in the old adage that the proof of the pudding lies in the eating thereof, it is enough to suggest that the symptoms of which the chronic intestinal invalid with ileal regurgitation most complains, may be caused to appear or disappear at the will of the physician or the patient, by the use or non-use of the diet to be described.

According to the degree of regurgitation, and in accordance with the inherent power of resistance of the individual, the undesirable symptoms produced by ileal regurgitation may become obvious in weaklings during the second or third decades of life. In the individual of sthenic habitus with marked powers of bodily resistance to disease, the same results may not however appear until middle age, or say the 50-60 year decade. Yet the time will inexorably come in the life of every individual in whom ileal regurgitation can be clearly demonstrated by opaque enema, no matter how strong this individual may have been in youth, when the train of symptoms indicative of disturbed intestinal function, and irritability of the nervous system increasing toward the breaking point, will drive the long-suffering and much misunderstood patient to seek medical relief.

When this time does come, the observant physician will not be surprised, on completion of the history and physical examination, to discover by fluoroscopic examination that the opaque enema is not completely and normally halted in its upward progress by the ileo-caecal valve. A total of many hours of fluoroscopic observation, with Dr. L. B. Morrison, leaves little doubt that there is a close relationship between the degree of ileal regurgitation demonstrated, and the severity of the symptoms from which the patients complain. Also, the prognosis may in these cases be confidently stated as good or less so, in proportion to this same degree of regurgitation.

Under a uniform technic, one may watch the colon fill with the opaque enema. There may be slight delay in the filling of the pelvic colon. Thereafter, the filling of the colon to the hepatic flexure may be so rapid as to seem almost instantaneous. This is true even in those cases presenting the frequent picture of spastic descending and dilated ascending colon, a condition not inconceivably due to faulty absorption from the intestine, abnormal irritation of the nervous system, and consequent irregular intestinal innervation. The ascending colon usually fills slowly, often greatly assisted by slight manipulation, by deep respirations, or more especially by spontaneous laughter of the patient.

In about 25% of the patients seen by the writer, the cecum fills, distends, and nothing more happens. Even with some effort, nothing can be made to enter the ileum. The one-way valve-sphincter mechanism is efficiently protecting the ileum against back-flow, as nature intended it to do. This fortunate minority may have an abnormally permeable colonic intestinal membrane, or some other irregularity which produces somewhat the clinical picture presented by those with ileal regurgitation. Such patients may be assured however that the same dietary procedures which have proven effective in those in whom regurgitation actually is present, will in them produce even more rapid relief from the symptoms of which they complain.

In the 75% or so majority of the patients observed fluoroscopically, the enema proceeds to the cecum as in the minority of cases just referred to. But thereafter, in the worst cases, the enema will continue almost without interruption to flow onward from the cecum into the ileum. It is however much more frequent to observe the following sequence: at first, none of the enema escapes into the ileum: after a delay of one or two minutes, active antiperistalsis begins, usually in the neighborhood of the mid-colon; this antiperistaltic wave proceeds toward the cecum; increasing pressure from this wave forces the opaque enema material through the ileo-caecal apparatus, to a degree varying with the individual under examination.

It is true that the bismuth or barium enema may be looked upon as a foreign substance. It must however be looked upon as a very bland substance, for the patients observed by the

writer (even with colons known to be irritable) seem to find comfort rather than distress from the presence of the enema, as given. The only exception is the patient with an excessively spastic colon, who may be unable to retain the enema for more than the briefest period; in such a case, active peristalsis in the normal direction may soon produce severe spasm or pain if retention of the enema be attempted. Incidentally, the observer may be aware of the coming of such a spasm before the patient is notified of coming events by the appearance of pain or cramps.

If antiperistalsis, seemingly of a degree only normal for the individual, can so easily force the enema onward through the ileo-caecal valve, it is only reasonable to assume that the same process may occur in the daily life of this individual. In other words, antiperistalsis may from time to time be forcing bacteria-laden material upward from the cecum into the theoretically clean terminal ileum.

The toxic ergot-like action of certain katabolites normally resulting from putrefactive colonic bacterial action upon the protein remnants of food only incompletely digested on arrival in the cecum, has been known since Dale and others first isolated that substance which in non-technical language is called histamine. Histamine is a representative of a group of similar products of bacterial activity in the colon. Physiologic research raises the probability that in normal health absorption of these substances may be so controlled as to utilize to advantage certain of their stimulant qualities. As with other potent drugs, action varies with concentration.

In excess, the histamine group is toxic, irritant, depressant to the nervous system.

Eppinger, ten years or more ago during a conversation in his Vienna laboratory upon the subject of vagotony, offered the writer clear proof upon himself, of the irritant action of histamine. Holding an ampule of the clear colorless fluid between the thumb and forefinger of his left hand, he requested observation of the skin on the back of this hand, predicting the result thus. "In from 5 to 7 minutes, there will appear where a drop of this liquid has come in contact with my skin, a raised red wheal which will itch intensely; within fifteen minutes the wheal will be disappearing; the intense itching will however persist for half an hour or more." It was as he said. A raised red wheal some 1.5 cm. in diameter appeared upon the skin, surrounded by a cloud of minute red dots of varying size, all itching intensely. This cloud of petechial spots was indicative of the points where the fine spray from the breaking of the neck of the ampule had made contact with the skin; within 30 minutes, no sign of redness remained upon the skin. If this normally produced bacterial katabolite can thus in excess so violently affect the supposedly resistant external skin, is it unreasonable to assume that it and its congeners, even when absorbed into the system by way of the circulation in amounts perhaps only slightly excessive in degree, may in the course of years exert a definite deleterious irritant and depressant action upon the sensitive and unprotected nervous system?

These and other considerations led to the gradual evolution of the diet to be described. Whether or not all of the intermediate steps outlined are in fact correct, remains for scientific proof. This much however may be stated with full assurance of clinical accuracy. The diet, if used as outlined, will produce with the chronic intestinal invalid, in whom ileal regurgitation is demonstrated, results which in the course of months will prove increasingly satisfactory to both the patient and the physician.

Admitting the possibility and the desirability of considering ileal regurgitation as a pathologic entity, question arises concerning its etiology and treatment.

The probability is that an incompetent ileo-caecal valve-sphincter mechanism is a developmental irregularity, as is hare lip or a sixth toe. In two patients observed, there was a strong presumption of traumatic origin; in one of these cases, re-examination showed that the valve had after six months of treatment become effective against back-flow. It is however more logical to assume that the valve is permanently inefficient.

The problem then becomes one of offering a diet which, on partial return from the cecum into the ileum, will cause a minimum of disturbance; a diet in other words which will provide the least possible amount of pabulum favorable for the rowth of the putrefactive bacteria of the colon.

It is this type of diet, the use of which is outlined in the following paragraphs. It may be utilized with good results, not only for the class of patients for whom it was originally devised, but for other patients in whom it is for any of many conceivable reasons deemed desirable to employ a balanced diet which will put a minimum strain upon the metabolic processes of the organism. Old age is a good example of such a condition. Clear-cut entities such as diabetes are of course excluded from consideration.

It is important to note that in practice, as soon as the patient has progressed to the second and third stages of the dietary treatment, he will in fact from month to month be living on a general diet. The only limitation is that some foods will be utilized on one day and other foods on another day, not all foods on every day. This in itself tends not only toward dietary simplification, but toward moderation in eating, an objective most devoutly to be aimed at in these days of almost universal under exercise and over eating.

In the use of this diet, one precaution is suggested. It is commonly stated that the organism will obtain all the iron required, if the diet

contains adequate amounts of greens, especially spinach. Practically, it is obvious that no good is accomplished by presenting iron in the form of spinach, if for some reason or other the organism does not or can not absorb it to an adequate degree. Whether this be the cause, or whether some associated blood-destroying mechanism nullifies normal absorption of iron, is beside the point. Clinically, many persons of the chronic intestinal type make better progress toward health, other conditions being equal, if in addition to the other forms of treatment, as general dietary, hygienic, orthopedic, endocrine, etc., the patient receives intermittent iron medication. Possibly any form of iron would do. Personally, satisfactory results seem to follow the use of sugar coated tablets of hemoglobin.

Certain matters of personal hygiene, as the avoidance of fatigue, are so intimately connected with good bowel function not only in invalids but in all persons both sick and well, as to be practically inseparable from any adequate consideration of successful dietary procedure. Paragraphs bearing upon such matters will therefore be found to occur throughout the Instructions.

Presented in somewhat the form actually used in talking with patients, these Instructions follow, in outline, the much more elaborate instructions given by the writer to all patients of the chronic intestinal type. To get results, one must obviously talk in the language of the patient, rather than for example expect a Frenchman to comprehend Greek without previous study of that language.

The immediate reason for presenting this paper is that the writer has been in frequent receipt of letters expressing appreciation of help received from his previous references to this dietary procedure; also, there have been frequent requests for more detailed information upon the subject.

It is in the hope that here and there a few patients of the chronic intestinal type may be benefited, that the present more detailed dietary outline is offered.

DIETARY INSTRUCTIONS FOR THE CHRONIC INTESTINAL INVALID

I. General Instructions

1. The best diet is a balanced general diet; this means eating a little of most everything, but, as the proverb has it, everything in moderation.

2. Your diet is general and unrestricted, except that you are not allowed the following animal protein foods; eggs, meat (including poultry), and fish.

Exception: Although fried, dropped, boiled and scrambled eggs are not allowed, you are allowed the usual puddings or other dishes containing the small quantities of egg used in routine cooking.

3. Having omitted from your diet such important protein foods as eggs, meat and fish, you must substitute for them an adequate amount of what may be called the "meat substitutes." Unless a sufficient quantity of these "substitutes" is ingested, you will be living on an inadequate diet, mostly starch and greens. Very likely, you will then become dissatisfied not only with your diet but with everything else in life, and a few weeks later you may begin to notice the loss of some of the energy which can only be provided by the dynamic protein foods.

The six "meat substitutes" most easily and universally obtainable are: peas, beans (not string beans), cheese, gelatine, nuts, and chocolate.

4. In addition to the proteins, the other important and necessary groups of foods are: fats, starches, and greens.

Usually, there is no difficulty in obtaining an adequate supply of these other foods, and in such form as to provide the necessary minerals, vitamines, and other factors of nutrition, without which no diet can be well-balanced or permanently satisfactory.

5. You may think that without eggs, meat and fish, you have nothing left to eat. This is not correct. You may have everything else in the way of foods which a well person may have. The quantities may vary according to your personal digestive capabilities, but you will find that, after leaving out the "meats," you will gradually become able to eat many foods which might previously have seemed to cause digestive difficulties.

6. It is possible, even probable, that two weeks or so after beginning the diet, you may experience an increasing sensation of depression. This will presumably be due to the necessary omission from your diet, of the undeniably stimulating animal protein foods. This "slump," if it comes, will be temporary. It does not mean that you are getting worse. You will soon begin to find yourself improving more rapidly than before your slump.

7. No diet can be very useful unless it can be applied simply, and controlled simply, even under unfavorable circumstances. Elaborate calory schedules are not usually essential in the application of this diet. Weigh twice weekly. If your weight remains constant, do not worry. You are eating enough.

Progressive gains in weight show that you are taking in more fuel than is being consumed daily in satisfying the current demands of your combustion engine.

If you are progressively losing weight, speak to your physician. If he says that the balance of your diet is satisfactory, then you must eat more of everything, especially of such simple foods as cream, and bread and butter. The only other alternative is for you to rest more, so that less fuel consumption will be necessary in order to offset your daily expenditures of energy.

8. Some foods have a bad name, mostly because they travel in bad company. Thus, for example, with "meats" omitted, welsh-rarebit becomes not only a harmless but a helpful and often necessary "meat substitute" in the diet.

9. With the concentrated "meat" fuels eliminated, the system needs and (when they are well cooked) can dispose of reasonable quantities of such homely and frowned-upon, but high-fuel foods as baked beans, pie, pastry, cake, doughnuts, griddle cakes, waffles, etc. From a chemical point of view, all of these foods may, if their composition be understood, find a place in a balanced diet, according to the whim of the individual patient.

Fried foods should as a rule be avoided. Cooked fats are not easily digestible. *Exception*: French style deep-fat frying is permissible when well enough done, i. e., with the fat very hot so that the cooked foods do not soak up grease.

10. Some of the "meat substitutes" are in themselves constipating, as cheese, nuts, and gelatine. This is only because they leave no residue. Provide the necessary residue from another source, as from spinach, lettuce, fruits, etc., and the tendency to constipation from the use of these important foods disappears.

11. Use daily not less than:

(1) Wholewheat bread; two slices.
(2) Butter; two butter balls.
(3) Lettuce; one portion.
(4) Crackers, hard; one portion.
(5) Fruit, raw; one portion.
(6) Milk; one glass.

12. Milk is not to be used as a drink. It is to be considered as a very valuable protein food, kept so to speak in reserve, not included for this reason in the group of the six "meat substitutes" above referred to. Use it as a food. Mix it with crackers, and take it with a teaspoon, slowly. Imitate the baby and chew it. Otherwise, consume at least twenty minutes in swallowing a glass of milk in small sips, during mealtime.

13. Air is swallowed with the food, always, by everyone. Air, so swallowed but retained in excess, makes most of the trouble usually blamed upon "gas" or "wind." Some people "crib" air. This is a bad habit. It can be stopped.

Normal people raise or belch most of their swallowed air up again. It should come up the way it went down, by the gullet. Those who do not get this swallowed air up the twenty inches or so from the stomach to the mouth will suffer unnecessarily while it is being forced down the twenty feet or more from the stomach to the rectum.

Excessive spasm or tightness of certain "ring" muscles of the stomach and intestine may interfere with the normally easy and silent belching or expulsion of gas or air by way of the mouth or rectum. This trouble is eventually much helped by the diet, with consequent relief of abdominal pain or distension, not to mention relief from a sensation of pressure about the heart so frequently complained of by persons experiencing this difficulty.

14. Water is more important to life than food. Keep your supply constant. How? Watch the color of your own water. It should be of a very pale straw color. If its color gets dark (and the color may vary much in a few hours of time), drink more water until the color is normal again. No set rule works or can work. The demand of your system for water may vary more than 100% from day to day. Your eyes are given you for your protection. Use them to prevent your "radiator from getting dry."

15. Eat five times daily if necessary, until you feel that you are getting enough nourishment on the diet. All fires burn more evenly when stoked often and in small amounts. The same is true of yours. Travel on your fuel, not on yourself, and thus help yourself to avoid fatigue.

16. Fatigue is fatal to intestinal comfort. Avoid it. Prevent it. Rest before you are tired, not afterward. Five minutes lying down after every half hour of work, or ten minutes after every hour of work, will often save you from fatigue when the more usual daily afternoon hour of rest will not.

Your intestine gets tired just as you do. It lies down on the job, and blows up with "wind" or "gas"; hence, pain and distension, often of sudden onset, frequently from purely emotional causes. Learn to control your emotions. Slow, carefully controlled muscular exercises help much.

17. The quickest way to put a temperamental intestine out of order is not to use a wrong food, but to "blow a fuse on the intestinal circuit," by a wrong or uncontrolled use of the nervous system. To avoid digestive trouble, it is not enough to eat correctly; you must cultivate serenity of spirit and nervous self-control.

18. Tea and coffee are not to be used as stimulants, but as flavors for hot water; whipping a tired horse is not a satisfactory manner of making continuous progress.

19. The most frequent cause of practical difficulty on this diet is an excessive use of starch in proportion to the amount of protein used in the menu. The onset of this sort of difficulty is usually heralded by an increasing intensity of such complaints as sour stomach and heart burn. This form of trouble may almost always be controlled by decreasing the amount of starch and increasing the amount of protein in the menu. Often even as little as one additional glass of milk for no longer than a day or two may suffice to correct the balance between starch and protein, and bring the desired relief from abdominal discomfort.

II. The Dietary Schedule

1. The more important articles in the essen-

tial food groups are divided into six classes, as follows:

A	B	C
MEATS	PROTEINS	STARCHES
(*Proteins*)	(*Meat Substitutes*)	Cereals
Eggs	Peas	Potato
Poultry	Beans	Rice
Meats	Cheese	Macaroni
Fish	Gelatine	----------
	Nuts	Tapioca
	Chocolate	Sago
	----------	(Bread)
	Avocado Pears	
	(Milk)	

D	E	
FATS	GREENS	
	Vegetables and Fruits	
	(a) RAW	(b) COOKED
Cream	Lettuce	Fruits
Lutter	Celery	----------
----------	Cabbage	String Beans
Oils	----------	Spinach
	Tomatoes	and all other
	Cucumbers	vegetables
	Radishes, etc.	*except*
	----------	*Potatoes, Peas*
	Fruits	*and Beans*

F

INTERMEDIATE PROTEINS

Egg-and-Milk	Egg Meringues	Bouillon
Egg Souffles	Hard	Custard
Omelette	Soft	Meat Gravy
Cheese		Brown Gravy
Chocolate		
Prune, etc.		

2. Outline Menu:

Breakfast

Fruit
Cereal
Toast, hard
Tea, weak, or
Coffee, Haag, or
Milk if desired

Mid-Meal Lunch Combinations

Crackers and milk
Wholewheat-cream cheese sandwich
Nuts and raisins
Crackers and chocolate
Bread and butter
Raw fruit

Dinner

One thick soup
(Milk base, but counted as protein only when made of peas or beans)
One protein (B)
One starch (C)
One cooked green (E, b)
One raw green (E, a)
Dessert (starch or gelatine, as necessary to balance the arrangement of previous items on menu)

Afternoon Tea

Usual tea, with bread or cake

Supper

One protein (B)
One starch (C)
One green (E)

Evening Lunch (before retiring)

Optional, or if losing weight or hungry

Early Morning Lunch (2 to 4 A. M.)

Optional, often helpful if wakeful
Malted milk (thermos) and crackers

III. The Three Periods of Dietary Treatment

First Period (Four to six weeks):

Meats (A) not allowed.

During this first period the diet must be strictly carried out, with the exception previously noted in regard to the ordinary use of egg in cooked starch dishes, cake, etc.

Only during this first period may the diet be considered difficult. In proportion however as you learn to use it well in this stage, you will know how to rely upon it later, when the inevitable appearance of some acute digestive disturbance makes it necessary to aid recovery by renewed use of the strict diet.

Second Period (Six weeks to six months):

Meats (A) allowed, but never on successive days.

(a) Meats allowed once a week only, first three weeks. (Sunday)
(b) Meats allowed twice a week only, second three weeks. (Sunday and Wednesday)
(c) Meats allowed thrice a week only, to six months. (Sunday, Tuesday, Friday)

During this second period, you will learn to arrange your diet so that your "meat" days will to the greatest possible extent coincide with the days when you dine with others than your own household. Thus you will avoid the everlasting criticism which your interested friends and acquaintances will inevitably direct toward your dietary procedures. The less others know of your personal food habits, the better for all concerned. Also, you will of course enjoy social contact in inverse proportion to the degree to which your food habits make you conspicuous.

Third Period (Six months to two years):

Meats (A) allowed on consecutive days, but over limited lengths of time.

With improving health, increased latitude in diet becomes possible. For a week, but seldom for more than two or three weeks at a time, even under favorable circumstances and with plenty of physical activity, diet may be forgotten. It should however in all probability be remembered again for at least a few days, at the first opportunity not too socially inconvenient.

Before you can be considered as graduated, you must have acquired the ability to vary your own diet according to the varying circumstances of your daily life. All persons experience minor fluctuations in health. Your object should be to train yourself to adapt your diet so that you will require help only under the more serious or unusual situations in which you may find yourself. But, on the other hand, it is well to call for help too often rather than too late, only to learn that it may take weeks instead of

days to put your digestive apparatus back on the tracks again.

IV. Special Instructions

1. The above outline is to be looked upon only as a skeleton menu, hardly more than a series of suggestions. Upon it, however, a suitable and satisfactory diet may almost invariably and usually without difficulty be constructed, through coöperation between the physician and the patient.

2. You must be seen twice weekly for at least one month, by the end of which time the diet should be approaching a condition of satisfactory adjustment.

3. During this first month, you must bring in a complete menu, at each visit. Only by discussing with you your actual menu can there be obtained the most rapid and most satisfactory progress, always taking into consideration both your personal food idiosyncrasies, and your social and physical requirements.

4. Certain "intermediate protein" (F) foods are often useful. Their use depends upon the fact that the individual particles of egg protein are sufficiently finely divided so that their digestion is practically completed by the time the colon is reached. Other foods in this group, such as clear soups and meat or brown gravies, probably do a minimum of harm and certainly may do much to add to the palatability of a near-vegetable diet.

These "intermediate" (F) foods may be used even during the first period of treatment, if progress seems in general sufficiently satisfactory.

5. The frequency of your full "meat" days is determined by the results of eating meats, as indicated by variations in your intestinal discomfort during the first three or four days succeeding the use of the meat foods.

The limit of toleration for the "meats" (A) varies not only with the general health, but with the mental, physical, and social status of the individual patient. Furthermore, the frequency with which the meats may be used to advantage will be found to vary directly in relation to improvement in the nervous and physical status of the individual.

6. Fatigue contraindicates "meats" (A) and calls for simplification of the diet. This means a return to the strict form of diet. Under conditions of acute fatigue, a minimum of food and a maximum of water should be used.

7. The greatest single difficulty in correlating a specific digestive attack with the food which may have caused it, proceeds from the fact that there so often exists a forty-eight hour gap between ingestion of the protein food which probably caused it, and the resulting attack of abdominal distress.

Once the existence of this forty-eight hour lag in intestinal reaction-time is appreciated and understood, it becomes vastly easier to associate cause and effect. Thereafter, it will become more and more obvious that in many cases the cause of an attack of intestinal distress is to be sought for in the ingestion of some representative of the "meat" group, eaten two or more days previously. Furthermore, such an attack of distress traceable to one such indiscretion in diet may frequently persist for six to ten days before the pre-existing degree of intestinal comfort becomes re-established.

It is then perhaps not without good reason that many persons have of their own accord limited their use of eggs, meat and fish, and that such persons so frequently express relief especially on learning that they are not to be forced to eat eggs daily.

Likewise, it perhaps is not without good reason that so many persons previously heavy meat eaters, and previously among the severest sufferers from abdominal and nervous distress, experience a sense of distaste and even revulsion rather than the anticipated pleasure when, after the end of the first period of treatment, they are again allowed their choice of a juicy steak, an English mutton chop, or some other highly considered table delicacy.

8. As you improve, you will have increasingly frequent "good" days. On these days you may feel so much better that you will find yourself doing more, in proportion to the degree of elevation of spirit which evidences the good day. Have more and spend more; result, nothing. This is a spendthrift way to health.

The only way to get ahead is to save, with health as with money. Until you have accumulated a health reserve satisfactory to your physician, you must make every effort to hold back, to be less rather than more energetic, on your first good days. Only thus comes health.

SUMMARY

1. Certain characteristics of the chronic intestinal invalid are indicated.

2. The existence of a correlation between ileal regurgitation and chronic poor health is considered.

3. Ileal regurgitation is held to be a positive indication for special diet.

4. An outline of the author's dietary treatment is presented.

CLASSIFICATION OF PRISONERS

A new division has been created in the Massachusetts Department of Mental Diseases to be known as the Division for Classification of Prisoners. It has been established to carry out the provisions of an act passed by the 1924 session of the legislature requiring a psychiatric examination of prisoners in jails and houses of correction of that state. This act was summarized in the April, 1924, issue of *Mental Hygiene*.

SCHISTOSOMA HEMATOBIUM INFECTION AND ITS RELATION TO PERSISTENT URINARY SINUS

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INTRODUCTION

Cases of schistosoma infection of the urinary tract have been reported in this country on several occasions. I am sure however that many other persistent urinary lesions have appeared in our midst that were undoubtedly caused by this parasite; these cases passing through many hands often without recognition. We are no longer isolated from the original habitat of this trematode, and as a result of our increasing relations with tropical countries must expect to find it with greater frequency. During the past twenty years I have seen twenty-one cases of schistosoma infection, six of which were in this country. The disease might be called rare in this part of the world but we must always bear it in mind, as a possible etiological factor in urinary disease. This remark is particularly applicable to those of us who see many patients from tropical countries.

DISTRIBUTION

Writers on tropical medicine give the chief source of the disease as Africa, some stating that it is particularly prevalent toward the southernmost part, as the Transvaal and adjacent sections. Others believe it to be more prevalent in the northern section as in Egypt and its immediate vicinity. Mesopotamia is also given as a point of frequent incidence and some investigators have found the disease in Western Australia. In the Americas, it has been reported in Brazil and I have seen several cases in the Panama Canal Zone.

ETIOLOGY

In schistosoma infections we have to consider the possibility of three forms of the parasite. The schistosoma hematobium, which is the more frequent in urinary infections, the schistosoma mansoni of intestinal involvement and the schistosoma Japonicum. The latter at times wanders into the intestinal tract but as a rule is satisfied with the production of cirrhotic manifestations in the liver. Among students of tropical medicine the term bilharziosis is usually applied solely to the infection with the schistosoma hematobium, or the urinary form. The three different forms of this trematode are usually sharply limited to the spheres above noted, although schistosoma mansoni has been reported in urinary lesions. I have never seen the latter in the urine nor have any of my friends in tropical countries and I am inclined to believe the cases reported were really those of an unusual form of the schistosoma hematobium.

THE INFECTION

The exact mode of infection is not definitely known, but it is noteworthy that these conditions usually occur in countries where the natives run around bare footed and have the habit of depositing their excrement in whatever place is handy. This suggests a lesion similar to that of early uncinariasis and we know that skin itch is common in these countries. Infection through both skin and mucus membrane is suggested by Neatby.

In whatever way the infection occurs we do know that the ova reach the portal system of veins and in this location develop into the adult worms. In the schistosomum hematobium, the ova finally reach the venules of the bladder and then gradually work their way into the bladder submucosa, as the ova is strongly attracted toward anything that resembles water. When the ovum finally reaches real water its capsule ruptures and the so called miracidium floats free. If it fails to find a suitable host within twenty four hours, it dies.

Leiper of the London School of Tropical Medicine believes that the intermediary hosts are certain fresh water snails which are found in considerable numbers in the irrigation canals of Egypt and similar places. This author states they also reach what corresponds to a liver in the snail and the parasite in this stage looks something like a tadpole. In this shape they leave their intermediary host to enter any suitable definitive host.

SYMPTOMS

The initial symptoms of the disease are never referable to the urinary tract and appear first in a month to six weeks, rarely as long as two months after the infection. Anemia with loss of weight and strength and a dry scaley skin are common. Early in the disease we also note a leucocystosis of moderate degree with a well marked eosinophilia.

The urinary symptoms appear in a few days to a week later and usually consist of frequency and painless hematuria while some cases develop a slight strangury. Several authors tells us that bleeding and dysuria usually cause the anemia but in the cases I have seen the anemia was present early in the disease. In some instances of marked hematuria the pain has been noted as excessive and excessive bleeding is usually due to the escape of the adult worms. The ova are always present in the urine, rarely though in large numbers and pyuria is present in varying degrees. On cystoscopy we find quite an inter-

esting picture. Pedersen in his case says the picture suggested at first tuberculosis of the bladder and at times this appearance is pronounced. The typical picture is somewhat as follows: In the vicinity of the ureteral orifice we see numerous little white ulcerations, with at times quite a yellowish tinge. These ulcers may be anywhere from a pin head in size to that of a pea. There is usually some swelling and oedema and the ureteral orifices are often difficult to locate. Bladder generally is pale and anemic, in the midst of which hemorrhagic areas appear. The trigone just to the inner side of the urethral orifice is raw, uneven and shows numerous little surface swellings, that often suggest a cystitis cystica. These are the egg pouches.

Tumor like formations sometimes occur, in fact are said by some to be frequent. These masses usually occupy the trigone and have quite an odd color varying from a dark brown to violet. In size they vary greatly but are usually small and have the shape of a wild strawberry. French authors call them mushrooms. These tumors produced by the irritation of the bilharzia eggs often simulate a papilloma and at times the so called papillo-carcinoma. However even real carcinoma are said to have been caused by the schistosomum. The tumors are often surrounded by granulation tissue incrusted with urinary salts, which greatly alters the picture and occasions much difficulty in the diagnosis.

Some writers tell us that they have seen the adult worm themselves waving like feathers in the bladder fluid, partly within the bladder substance and partly free. In urine containing pus and blood in quantity we at times find masses of epithelium from the kidney pelvis and ureter, mixed with amorphus urates. In these little balls of tissue we often find the schistosoma ova and this means involvement of the kidney or ureters as well as bladder. The deposition of the egg always produces an irritation, the ova acting as a foreign body and in the ureter it undoubtedly often causes a stricture. After operations they frequently cause the persistence of urinary sinuses as my two cases sum quite well.

DIAGNOSIS

The history tells of a life spent in one of the tropical countries where the disease is endemic, or of a prolonged visit there. Symptoms of a chronic cystitis and the passage of blood usually without pain are suggestive and absolute proof is found in the demonstration of the ova in the urine. When the eggs are found in the urine they can easily be hatched by diluting the urine about 1 to 70 or 1 to 80 with water. The surrounding temperature should be about 120F in order to provide the necessary warmth. Under these conditions the miracidium will be seen to assume great activity, quickly break its way out of the sack and the worm swim free in the water.

TREATMENT

For many years our treatment was without success, all new methods were given a thorough test and were usually found wanting. When trypanroth and salvarsan appeared I tried them both on a case without any success.

In the treatment of Christopherson our efforts are finally crowned with success and I believe it is a real specific. Christopherson injects intravenously a solution of potassium and antimony tartrate, (tartar emetic) in steadily increasing doses until we are no longer able to demonstrate the presence of the parasite. The author describes his method as follows: Place a solution of the strength of half a grain to one cc of aqua destillata in a sterile rubber capped bottle. Begin the treatment by injecting one cc of this solution diluted with five cc of normal saline into a prominent vein. Repeat this every other day, gradually increasing the stock solution by one cc, until 5 cc of the solution (2½ grains) is given at one dose. The diluting saline should be increased gradually until the dilute mixture measures 10 cc, using a syringe of not less capacity than this. Great care must be taken to see that the needle is well in the lumen of the vein before the fluid is injected and the patient should remain in bed for the rest of the day. Physiological effects of antimony will sometimes appear and must be watched for. In adults as much as twenty or thirty grains may be needed, in children less than half of this. In children emetin 1/10 to 1/4 grain intramuscularly are sometimes found of value. Local treatments as bladder irrigations of barley water ℥ i to the pint or boric acid solution are said to be of value. They are however not necessary, when tartar emetic can be used. Internal medication per ora I do not believe is of any value whatever.

I report the following two cases of persistent urinary sinus as of interest.

CASE I.

J. W. Panamian, married age 36. Occ. Storekeeper.

Family history: Father died at 68 apparently of pneumonia. Mother living has chronic malaria. One sister and brother living and well.

Previous personal: Variola in childhood and yellow fever at about 16. Denies any venereal history.

Present condition: States that about two years ago he began to have difficulty in voiding, his urine was cloudy and at times very bloody. Suddenly complete obstruction occurred and an external urethrotomy was performed. After the operation wound showed no evidence of healing for six months, when an attempt was made to close it. Wound after this operation promptly broke down, urine was cloudy and at times bloody. This condition has continued till the

present time. Patient looks pallid and feels weak. A sinus is found in perinaeum at the site of external urethrotomy, which is about one and a half inches long and from which cloudy urine is flowing.

Blood examination: Red cells 4,020,000. White blood cells 11,000. Hemoglobin 80%. Eosinophiles 4%.

Urine slightly alkaline. SG. 1.026; cloudy moderate amount of blood and pus. Microscopic examination shows abundant red blood cells, pus cells, vesical epithelium and the ova of the schistosoma hematobium.

TREATMENT

Intravenous injections of tartar emetic were made strictly in accordance with the method of Christopherson and in ten days the urine was clear of parasites. In a few days after the urine became negative the wound in the perinaeum began to respond to stimulation by balsam of Peru, healthy granulations appearing and in three weeks it was entirely closed.

CASE II.

M. K. Persian, age 23. Occ. Carpet dealer. Family history; Most indefinite.

Previous personal history: Has had several tropical affections of which I have not heard of before. Thinks he had Spanish influenza about four years ago. Denies venereal history.

Present complaint: Sinus over left kidney and slight hematuria. Patient states that about eight months ago he was operated on in one of our hospitals for what the doctors told him was a perinephritic abscess. Says that he drained considerable pus and urine for about two months, when wound appeared to be almost healed and he then left the hospital. In about one week after leaving the wound broke down again and has continued to discharge considerable pus and some urine ever since.

Examination shows a sinus over the left renal region, surrounded by a mass of tissue that very much suggests carcinoma, (section however was negative) and from which pus and urine exude. Patient feels weak and has a very pasty appearance.

Examination of the urine from the bladder and from the sinus both show the presence of schistosoma hematobium.

Blood examination: Red cells 3,986,000. Whites 8,200. Eosinophiles 5%.

TREATMENT

Intravenous injections of tartar emetic were employed as in the first case, and in two weeks the parasites had disappeared. The wound after removal of much of the excess granulation tissue healed completely under stimulation by balsam of Peru, in about eighteen days.

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A LAYMAN'S VIEW OF HEALTH EXAMINATIONS

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DURING the last twenty-five years the author has had to seek professional medical assistance but once, and that was from an oculist. Such a record may be called fortunate or unfortunate depending somewhat upon one's point of view. As a matter of fact it is both, and that is no paradox. It is fortunate to have been able to have dodged disease successfully for so long a period and to have been able to maintain excellent health without medical aid or expense; it is

unfortunate to have gone so many years without periodic health examinations to ascertain whether the human mechanism has been functioning at its highest rate of efficiency.

Good health is, in fact, considerably more than mere disease dodging. It is the ability so to live that the maximum benefit is derived from living. It is not only getting along without being ill, but it is that condition in which one is able to enjoy life. In other words it is the perfect, regular operation of the human machine, so that there is the greatest productivity, utility, and potentiality. Such a desirable status ought to be the goal of every normal, ambitious individual and to achieve it, the aid of the physician will frequently be necessary. Given a reasonably decent heredity there seems to be no good reason why any person cannot secure perfect health.

The promotion of this ideal of health is the function of the modern physician. The doctor of today is not and should not be merely one who cures disease and rectifies impairments. He is and ought to be one who attempts to maintain the salubrity of his patients. He is not only a dispenser of pills, but a purveyor of positive health. The public realizes this fact and expects the present day physician to practise preventive as well as curative medicine.

The health examination is one of the outstanding features of modern preventive medicine. A health examination is a thorough appraisal of an individual, made by a competent doctor of medicine in order to detect physical and mental impairments and faulty habits of hygiene with a view to their correction. It has been called an audit of one's assets and liabilities. It is of value at all ages and for all conditions and types of humanity. The reasons for this are well known to the profession and now they are beginning to be realized by the laity.

The value of the periodic human stocktaking lies in the fact that it may bring out latent defects which would not otherwise have been discovered until they might possibly have done irreparable harm. We are informed that many diseases, especially those known as the degenerative or organic diseases, are insidious in their action and do not manifest themselves until considerable progress has been made. In the early stages these maladies are usually not difficult to cope with, but when they have gone on unhindered, it is often a long, tedious, and expensive task to treat and cure them. Sometimes they are found too late and life is unfortunately shortened.

The health examination is for the individual, therefore, a means of life extension or longevity promotion. The experience of a leading insurance company is cited. This company offered free physical examinations to its policy holders. Of the first 6000 who availed themselves of the privilege, it was found that there had been a 28 per cent saving of mortality. The company figured that because several hundred fewer persons died than were expected to die, according to actuarial calculations, based on long years of experience, there had been a return of the investment and a profit of 200 per cent. If it is worth that much to an insurance company to give health examinations, it certainly ought to be worth it to an individual to have one.

Of the benefit to the individual there is no question. How about the physician? Does he lose by making physical inspections? Would he be better off economically to wait until disease overtakes his patient and then collect his fee for curing it? The answer is no. In the first place, no reputable doctor is so mercenary as to think only of how much he can make out of the flock of humanity which passes through his office. He is not a tradesman, like the chiropractor, but a professional man, a public servant. He treats and advises in order to correct the ills of mankind, and in so doing he has a right to make a legitimate living.

No physician's practise would suffer by giving many health examinations. If all the people could be induced to adopt the custom of the annual physical inventory, every doctor would have a greater volume of practise. More than that he would find that he had before him many more ailments than he had ever met with before. They might be less serious ones, but that would be better for all concerned. We are informed that experience has shown that when large groups of persons have medical examinations, invariably about three out of four are found to have physical defects. Most of these are remediable and many could have been prevented by proper advice. The army draft, the only real national health examination which the populace has ever had, revealed a shocking number of physical disabilities. It is essential for the future of the race that such impairments be prevented in coming generations.

Best of all, however, the physician would secure the confidence of the lay public. Although the medical profession is today probably at the height of its scientific achievements, it needs a more effective support on the part of the public. Many bizarre and fantastic cults have arisen of late years to infest a gullible people and, due to an ignorance of the harm they do to those who are deluded into submitting themselves to these so-called healers, they have been allowed to prosper and even have been given legislative sanction in some states. Any intelligent person realizes that these irregulars treat only symptoms by means of crude, unscientific methods, adorned with voluble assurances of their efficacy. One reason, aside from ignorance, why people do go to the charlatan is because they do not, or think they do not, get adequate relief from the regular.

The health examination, properly given, is a means to forestall the encroachment of incura-

ble or difficultly curable afflictions and thus assure to the patient a better and longer life. No good business man would think of undertaking any new and important venture without first making a thorough survey of existing conditions. The same theory applies to the business of life, which is quite the most important of all. No engineer would drive his machine constantly without inspecting it completely at regular intervals. That goes for the human system, too. Most intelligent persons now have acquired the laudable habit of going to the dentist every six months or a year for an inspection of the teeth. If a small cavity is found, it is repaired and the development of a larger and more painful one is prevented. Again the analogy for the entire body is evident. Find the minor impairment and correct it before it becomes serious. Nobody but an expert, a licensed physician can do the finding.

The organized medical profession, through the American Medical Association, has twice gone on record as favoring this movement for health examinations. A resolution was passed at the annual convention in 1922 and another was adopted in 1923. Both stated the value of the periodic medical examination, urged the county societies to take up the matter and be prepared to give to the laity such examinations. The patient, unless indigent, is expected to pay for the examination. It ought to be a good investment for him. The American Medical Association has also prepared a standard examination form and has issued a reprint outlining a suggested technique, which was written by Dr. Haven Emerson, Professor of Public Health at Columbia and former health commissioner of New York City.

A few years ago a physician would look with considerable surprise at an apparently healthy individual who wandered into his office and requested such a radical thing as a "health" examination. It is even not entirely beyond the realms of possibility that he would promptly advise the patient to get out and come back some time when he felt sick. While there may be an occasional physician who would act that way today, the great majority of doctors are ready to give complete and adequate examinations and, in fact, many are doing just that regularly in their practise. A patient makes an appointment, so as not to interfere with his physician's office hours and then is perfectly willing to spend the hour or so required in making the thorough survey of his physical makeup. He is likewise not dissatisfied if no pink pill or brown liquid is prescribed, and he feels he has got his money's worth if he is given sound and sensible advice about his diet, his amount of exercise, his posture and other matters of personal hygiene.

The slogan, "Have a Health Examination on Your Birthday," is getting to be a familiar maxim with the lay public. This is due to the campaign for such examinations which has been conducted for the past year by the National Health Council, a confederation of the twelve leading national voluntary health organizations of the country with the principal Federal health services as conference members. From its headquarters at 370 Seventh Avenue, New York, this agency has sent out a large amount of educational publicity on the subject and has formed state committees in most of the states, at least in all where enough energy can be mustered to conduct a campaign. One's birthday is an appropriate occasion on which to have a health examination, because all persons are interested in increasing the number of their future birthdays and in making each of them as enjoyable as possible. That can only be accomplished by means of perfect health. This axiom, "Have a Health Examination on Your Birthday," was originally suggested by the Tuberculosis Committee of the Brooklyn Bureau of Charities.

A campaign for human inventories can be most appropriately sponsored by these societies which are not strictly medical associations, and to the medical profession are known as lay organizations. To the public they are looked upon as scientific bodies, which of course they are, and they have the confidence and support of the people. Thus, when an anti-tuberculosis league, a child welfare society, or public health association, promotes the campaign for health examinations, no one can make the absurd charge that the doctors are trying to increase their own business. Although leading physicians are always interested in these associations and take a prominent part in organizing and maintaining them, they include in their membership many lay persons, such as social workers, sanitary engineers, nurses and public health nurses, club women and other civic leaders.

For that matter, there seems to be no valid reason why physicians should not themselves promote health examinations. The author heard Dr. George E. Vincent, President of the Rockefeller Foundation, tell the members of the Southern Medical Association that they could and ought with propriety advise their own patients to come to them at least once a year for a general medical overhauling. Certainly such a procedure would violate none of the ethics of a profession which is most scrupulous regarding its ethics. Both dentists and doctors of medicine should, in fact, make it a point to get in touch with every patient at stated intervals, perhaps on the patient's birthday, and urge him to come for a human inspection. Of course a physician might not be looked upon with favor if he advocated that his colleagues' patients come to him and naturally he should not do this. He could suggest that his own return at intervals, however, and leave the promotion of the general movement and the selling of this bene

ficial idea, to the lay agencies best equipped with publicity methods for doing it.

It is said that the National Health Council wished to begin its campaign among the people for health examinations a year sooner than it did, but postponed it because leaders in the medical profession, particularly the representatives of the American Medical Association, asserted that physicians were not then ready for such a campaign and would not give adequate examinations if people came to them. Possibly there may have been some justification for such criticism at that time, but certainly the profession is ready at the present moment. They are ready, for one thing, because the public is already coming in increasing numbers and demanding that they be given a real examination which will be satisfactory. This proposition has been "sold" to the people, or a large part of them and they look to the physician to do his part in this movement.

The general practitioner who wants the biggest practise these days must be able to deliver a sufficient physical examination. Otherwise, his patients and prospective patients will pick out some one else. If they can not get what they want from the regular members of the profession they will dash around the corner to the osteopath, or what is worse, to the chiropractor. Health examinations have come to stay in the pharmacopeia of preventive medicine. The physician who can not give one or who will not, or who wants to procrastinate by appointing a committee to investigate them and find out what it is all about is, in my humble opinion, too retrogressive to be allowed to practise or attempt to practise medicine.

This is a layman's view of the subject. The author makes no claim to any knowledge whatsoever about curative medicine. He had a health examination shortly after his last birthday. In fact he had two of them independently and found that they checked very well indeed. Both were most stimulating in that they revealed only a few very minor defects. He intends to have one at least once a year the remainder of his life and by so doing expects, with all the assurance in the world, to live to be at least one hundred years of age. If all the people in this country would cultivate this same custom, there seems to be no good reason why at least twenty years could not be added to the average span of life in this country, which, according to the tables of life expectation, is now only about 58 years. Twenty years is worth an hour devoted to one health examination a year. At least it is to this writer.

A PRELIMINARY REPORT ON DIPHTHERIA ANTITOXIN THERAPY IN THE PREVENTION OF COMPLICATIONS SECONDARY TO MUMPS. REPORT OF 5 CASES

BY C. L. THENEBE, M. D., HARTFORD, CONN.

DIPHTHERIA antitoxin has been employed for some time in Europe as a means of preventing complications secondary to mumps, especially orchitis. This has been used with very favorable results.*

The complications of mumps while not severe are discomforting to the patient and often cause anxiety to the patient and the immediate family. A secondary atrophy of the testicle is a very frequent occurrence after orchitis. A neurosis instigated by an atrophied testicle or testicles will also be avoided if the occurrence of the orchitis is prevented. The incidence of mumps is greater in the male than in the female.

A therapeutic measure then directed to prevent complications is worthy of administration in order to benefit the patient and to give the physician a reliable method to do the same.

Case No. 1. Hospital No. 3360. R. G. G. Age 27. Male. He was admitted to the Isolation Hospital March 26, 1922, with a chief complaint of a swelling on both sides of the face which started 2 days prior to admission. As far as he knew the swelling started on both sides of the face simultaneously. No difficulty in swallowing but there was slight pain about the region of the parotids upon masticating coarse foods. On March 27th, he developed a dull ache in the scrotum.

Physical examination on admission was entirely negative excepting a moderate bilateral swelling of the parotid glands with a slightly enlarged and tender left testicle. Temperature 100. Pulse 100. Treatment: Bed; an initial cathartic; an alkaline mouth wash at 3rd hour intervals; sodium bicarbonate via mouth for 2 days; cold compresses to the region of the parotids and scrotum and a liquid and soft diet. In addition to the above 15,000 units of diphtheria antitoxin was given, intramuscularly.

Clinical Notes: March 27. There was no rise in temperature after the antitoxin. Pain and swelling has subsided in left testicle. There is however more swelling of the parotids.

March 28. No more swelling of the parotids, the tenderness on palpation has disappeared.

March 29. Parotids decreasing in size.

March 31. Parotids practically normal.

April 1. Discharged complying with his wish. Testicle normal in size, no tenderness. Still a

*Serotherapy of Mumps. J. deD. Villegas Ruiz. Gaceta Medica de Caracas, March 15, 1921.

very slight swelling of the parotids remaining. The urine was negative. Culture of the nose and pharynx was negative for the K. L. Bacillus. No serum rash developed. The temperature reached normal in 3 days. The pulse dropped to 64 and remained slow. Comment: This case represents an early orchitis which was definitely improved within 18 hours. There was little or no effect upon the parotid glands.

Case No. 2. Hosp. No. 3368. A. W. Age 26. Male. He was admitted to the Isolation Hospital March 28, 1922. Chief Complaint: Pain in scrotum and both sides of the face. Pain and swelling of the face started 4 days prior to admission. Both sides of the face seemed to become involved at the same time. Nausea and vomiting seemed to be coincident with the development of pain in the scrotum which started March 26th. He also complained of pain on both sides of the face upon swallowing and mastication of coarse foods.

Physical Examination: March 28th. Negative excepting a middle cervical adenitis, a slight bilateral enlargement of the parotid glands and a marked bilateral enlargement of the testicles. Slight tenderness present over the parotids and marked tenderness of scrotum. Temperature 102. Pulse 100.

Treatment: Routine as described. 20,000 units of antitoxin was administered intramuscularly.

Clinical Note: March 29th. No rise in temperature after the antitoxin. Testicles still large but the tenderness has subsided greatly.

March 30th. Very slight swelling of the parotids. Swelling of testicles has subsided to a marked degree, with no tenderness.

March 31st. Further subsidence of parotid and testicular edema.

April 1st. Testicles apparently normal in size. No tenderness. Still a slight swelling of the parotids remaining.

April 6th. Discharged. No evidence of involvement of the parotids or testicles.

Urine on March 29th showed a trace of albumen, no casts. Other examinations negative. Temperature reached normal within 2½ days. Pulse dropped to 60 and ranged from 60 to 68 until discharged. Cultures of nose and pharynx for the K. L. Bacillus were negative. No serum rash developed.

Comment: This represents a case with marked bilateral orchitis which was improved after serum therapy in a short interval.

No secondary testicular atrophy has followed to date.

Case No. 3. Hospital No. 3723. C. B. Age 18. Female. Admitted to the Isolation Hospital February 28, 1923. Chief Complaint: Pain and swelling of the left side of the face. The pain started Feb. 27th, and was followed by swelling. No other symptoms were complained of.

Physical Examination: Negative excepting for a moderate swelling and tenderness over the left parotid. Temperature 101. Pulse 90.

Treatment: Routine as described. No antitoxin was given at this time because of the patient's objection.

Clinical Notes: March 1st. Right parotid became involved. Pain complained of in the lower epigastric region. (Pancreatic involvement?)

March 2nd: Further involvement of the right parotid. No change, left.

March 4th. Left submaxillary involvement. Still discomfort epigastric region. Stools negative however and no nausea, vomiting or diarrhea.

March 5th. Right submaxillary involvement. Temperature 102.

March 6th. 20,000 units of antitoxin given, intramuscularly. Very slight improvement parotid and submaxillary glands.

March 7th. No rise after the antitoxin. Glands much less tender and swelling subsiding. No pain in epigastric region.

March 10th. Glands practically normal.

March 15th. Discharged. No remaining evidence of the parotid or submaxillary involvement.

Urine was negative throughout. Cultures of the nose and pharynx were negative for the K. L. Bacillus. No serum rash developed. The temperature reached normal the 11th day of the disease. Pulse ranged from 80 to 110. Comment: This represents a case where antitoxin was given late. There was no further progress of the disease or its complications after the administration of antitoxin.

Case No. 4. Hosp. No. 3370. S. N. Age 27. Male. Admitted to the Isolation Hospital March 29, 1922. Chief Complaint: Pain and swelling of both sides of the face. On March 27th, pain and swelling of the right side was noticed. On March 28th, the left side became involved. Malaise and chilliness was also complained of. No other complaints.

Physical Examination: March 29th. Negative excepting a marked swelling of both parotid glands particularly the right, with the accompanying tenderness upon palpation. Temperature 103. Pulse 100.

Treatment: Routine as described. 20,000 units of antitoxin was given intramuscularly.

Clinical Notes: March 30th. No rise in temperature after the antitoxin. No change in the appearance of the parotid glands. Slightly less tender.

April 5th. Swelling has subsided markedly.

April 12th. Swelling has subsided completely. No tenderness. Patient discharged.

Urine: March 30th. Faint trace of albumen, no casts. Succeeding examinations were negative. Cultures of nose and pharynx were negative for the K. L. Bacillus. No serum rash developed. Temperature became normal on the

third day. Pulse ranged from 64 to 90 from the third day until discharge.

Comment: This represents a marked bilateral parotitis treated early with diphtheria antitoxin. The rapidity of the subsidence of the parotitis over the usual case seemed to be slightly increased. No complication developed.

Case No. 5. Hosp. No. 4178. M. S. Age 24. Male. Admitted to the Isolation Hospital February 19, 1924. Chief Complaint: Pain and tenderness with swelling of the left side of the face. This started 2 days prior to admission. No other complaints.

Physical Examination: Feb. 19th. Negative excepting an impurity of the 1st sound mitral area and moderate swelling of the left parotid, with slight tenderness upon palpation. Temperature 99.6. Pulse 94.

Treatment: Routine as described. 20,000 units of antitoxin given intramuscularly.

Clinical Notes: February 20th. Rise in temperature of 3.2 degrees after the antitoxin. No change noted in the parotid gland.

Feb. 21. Temperature reached normal. Swelling has slightly subsided.

Feb. 25. Swelling still subsiding.

March 1. Discharged. Swelling of the left parotid has almost subsided completely.

Urine was negative. Cultures of the nose and pharynx were negative for the K. L. Bacillus. No serum rash developed during hospitalization.

Comment: This case represents a moderate unilateral parotitis. The right side did not become involved. No complication developed.

All the above cases showed definite congestion of the pharynx (pillars and tonsils) and a positive Cowie's sign.

To this group of cases, I wish to report on 7 additional cases. These cases were mixed, adults and children, male and female, which were treated with diphtheria antitoxin before the development of any complication. The antitoxin was given as a favor to my suggestion.* In this group of cases, there was no development of any complication secondary to mumps.

Discussion: The beneficial result obtained in these cases may be secondary to the non-specific protein reaction following the administration of the antitoxin. Plain horse serum, milk or other non-specific protein might give the same beneficial result. I am at present running control cases on the above reported cases. If, however, the beneficial result is dependent upon the non-specific protein reaction solely, the same result might not be obtained if the dose were diminished or better results could be expected with the use of plain horse serum. If a specific element factors in the use of antitoxin, then the same beneficial result could be expected if a smaller dose was used. Throat cultures of the above cases while negative for the Klebs Loeffler Bacillus showed the presence of an organism closely resembling it, i. e., a diphtheroid. It is possible for this organism to produce a toxin which has selective primary action upon the salivary glands and secondary action upon some of the glands of internal secretion. This toxin may be similar enough to the toxin produced by the Klebs Loeffler Bacillus that an injection of diphtheria antitoxin would be specific in its action.

In a survey of the diphtheria cases admitted to the Hartford Isolation Hospital, a past medical history of mumps was extremely rare. This may have further significance in attempting to establish a relationship between diphtheria and mumps.

I have used plain horse serum on one case. There was no apparent beneficial result secondary to its use.

Sensitization to horse serum may result after this injection. Desensitization is practically easy in the few sensitized cases where it will be necessary to use a preparation containing horse serum again at some future date. Desensitization is not necessary in the majority of cases even though sensitization be present, because the reaction is only rarely of grave import and the injection can be stopped as soon as allergic symptoms develop. Adrenalin chloride can be used as an additional precautionary measure where sensitization is present, immediately before, during and after the injection if necessary.

Therefore a preliminary skin test in order to determine individual sensitivity to horse serum is not an essential procedure because of the great rarity of true anaphylactic shock. If you have any reason to suspect sensitization from the history, i. e. hay fever, asthma, urticaria, etc. then an intradermal test should be done as a safe procedure to determine if sensitization to horse serum is present.

Local discomfort could be avoided if the antitoxin be given intravenously. This would increase the incidence of moderate to moderately severe reactions depending upon the grade of antitoxin administered and the individual sensitization to horse serum. The incidence of serum rash would also increase depending upon the same factors.

Summary: Based on the cases reported only. Diphtheria antitoxin is an efficient therapeutic measure in preventing the complications secondary to mumps, particularly orchitis.

It increases the rapidity of the subsidence of the secondary complication, i. e., orchitis, if this complication be present. It may have some bearing on the prevention of a secondary atrophy of the testicle if the antitoxin is administered after the appearance of an orchitis.

It has little apparent effect upon the rapidity of the subsidence of the primary seat of the inflammation, i. e., the parotid glands.

The beneficial result obtained may have a specific element factoring. Additional experimental work is necessary to establish any definite conclusions.

*I express my gratefulness to Dr. John T. Lane, Hartford.

THE VALUE OF THE BLOOD CREATININ IN NEPHRITIS*

BY W. G. WALKER, M. D.

FOLLOWING the finding of an increase of creatinin in the blood of some cases of nephritis by three different groups of workers (Neubauer, Münch. Med. Wochenschr. 1914, LXI, 857. Folin and Denis, Jour. Biol. Chem. 1914, XVII, 487. Myers and Fine, Proc. Soc. Exper. Biol. and Medicine, 1914, XI, 132), much has been written concerning the prognostic value of such a finding (Myers and Lough, Arch. Int. Med., 1915, Vol. XVI, 536. Chace and Myers, Jour. Am. M. Assn. LXVII, 929. Myers and Killian, Proc. Soc. Exper. Biol. and Med., 1918-19, XVI, 41. Myers and Killian, Am. Jour. Med. Sc. 1919, CLVII, 674. Feinblatt, Boston Med. and Surg. Jour., 1923, 399. Feinblatt, Am. Jour. Med. Sc., 1923, 249). A blood creatinin of five (blood creatinin and blood urea nitrogen figures are given in milligrams per 100 c.c.) or more, in a case of chronic renal insufficiency is quite generally regarded as a sign of poor prognostic omen, and so it is regarded by us. However, we have seen occasional cases of chronic nephritis with high blood creatinin values greatly outlive the time usually allotted to such cases. Furthermore, we have felt for some time that the clinical condition of the patient, plus the blood urea nitrogen and 'phthalein determinations, probably gave us as much information as the blood creatinin concerning the progress of the renal lesion. It, therefore, seemed desirable that we analyze our creatinin figures. We have collected data on thirty-eight of our cases, who had blood creatinin values of five or more, and have arranged this data according to the heighth of the creatinins in Table I. The cases are divided into five different groups, depending upon the heighth of the blood creatinin. Thus the cases with creatinin values between 5 and 10 mgm. make up Group I, those with creatinin values between 10 and 15, Group II, those with values between 15 and 20, Group III, those with values between 20 and 25, Group IV, and those with values between 25 and 30, Group V. This table gives the total number of cases in each group, the number that are still living, the number that died, the maximum, the minimum, and the average duration of life after the creatinin determination, in each group. Repeated creatinin determinations were made on many of these cases, and as their disease progressed or retrogressed the results varied. There is, consequently, an overlapping of the cases in the different groups.

TABLE I

Creatinin in mgm. per 100 c.c. of blood	No. of cases	No. still living	No. dead	Maximum duration in days*	Minimum duration in days*	Average duration in days*
5 or more to 10 Group I	24	2	22	1406	1	205
10 or more to 15 Group II	24	1†	23	901	Same day	105
15 or more to 20 Group III	14	1‡	13	157	1	35
20 or more to 25 Group IV	9	0	9	56	1	17
25 or more to 30 Group V	2	0	2	3	1	2

*Does not include those still living.
†This case also occurs in Group I.
‡Acute nephritis.

A glance at the first group will show that only two of the twenty-four cases are still alive. One of these is in a state of low grade uremia 261 days subsequent to a blood creatinin of 9.37. The other patient has a severe chronic nephritis 2 years and 272 days following a blood creatinin of 5.23 mgm. The latter case, however, has never, subsequently, had a blood creatinin as high as five. The duration of life in another case in this group is quite remarkable. She lived for three years and ten months, 1406 days, after her blood creatinin had risen to 6.43. At the time of this creatinin determination an acute process had been engrafted upon her chronic nephritis, and 4½ months later the blood creatinin had fallen to 3.3. However, during the 3 years and 3 months previous to her death the blood creatinin was never found below 5. Another patient, who had a chronic nephritis, lived for one year and 124 days, during which time the blood creatinin remained above 5. One patient in this group with subacute nephritis lived for 1 year and 269 days. His blood creatinin never returned to normal during this period. Of the remaining nineteen cases in Group I, six lived for more than 200 days, one lived for 191 days, and another for 124 days, while eleven died in less than three months. Nine of the latter died in less than a month.

Group II (creatinin 10-15 mgm.) contains twenty-four cases. Two of these had acute ephritis while six others had an acute process complicating a long standing nephritis. Seven of these eight cases died within 20 days, while the one who had an acute exacerbation of a subacute nephritis lived for two years and 171 days. During this time his blood creatinin returned to normal and subsequently rose again. Sixteen chronic nephritics complete this group. One of these is alive 129 days later but she is in uremia. Four lived for 230 or more days. The remaining eleven died within six months, and eight of these lived for less than a month.

*From the Medical Clinic of the Peter Bent Brigham Hospital. This paper is No. 17 of a series of studies in metabolism from the Medical School of Harvard and allied hospitals. The expenses of this investigation have been defrayed (in part) by a grant from the Proctor Fund of the Medical School of Harvard University for the Study of Chronic Diseases.

TABLE II.

	Group I				Group II				Group III				Group IV				Group V					
No.	Date	Cr.	BUN	Phth.	Date	Cr.	BUN	Phth.	Date	Cr.	BUN	Phth.	Date	Cr.	BUN	Phth.	Date	Cr.	BUN	Phth.	Diagnosis	Date of Death
S. 2904	6/6/19	5.00	24	--																	Ac.Nephr.x $HgCl_2$	2/21/19
6264	12/3/19	5.00	29	26																	Chr.Nephr.x Hypert.Chr.Myo.	6/8/21
15371	10/25/21	5.23	90	30																	Chr.Nephr.	Still Alive 1/6/24
6768	11/14/18	5.30	53	SPT.																	Chr.Nephr.x Hypert. Chr. Myo.	7/17/18
7957	12/3/18	5.99	56	Tr.																	Chr.Nephr.x Hypert. Chr. Myo.	8/7/18
8832	12/20/18	6.65	70	3																	Chr.Nephr.x Hypert.	2/22/19
11913	9/29/19	7.35	111	Tr.																	Chr.Nephr.x Hypert.	2/1/20
11867	9/24/19	7.45	140																		Chr.Nephr.x Hypert. Chr.Myo.	11/18/19
10973	5/29/19	7.95	217	Pt. Tr.																	Chr.Nephr.x	5/28/19
20649	5/9/23	6.23	68	Tr.	9/6/23	12.5	79	0													Chr.Nephr.x Hypert.	Still Alive 1/6/24
13103	12/17/20	6.43	53	Tr.	3/25/20	10.00	108	0													Sub.chr.x Nephr. Ac.Exacerb.	9/12/22
20320	1/20/23	6.52	54	--	1/21/23	10.84	84	--													Ac.Nephr.x $HgCl_2$	1/23/23
14853	12/22/20	6.86	74	8	1/7/21	14.12	145	--													Chr.Nephr.x Hypert.	1/11/21
20322	4/24/23	8.26	73	3	1/19/23	11.6	68	2													Chr.Nephr.x Hypert.	8/15/23
13018					2/27/20	10.28	85	SPT.													Sub.ac.Nephr. Ac.Exacerb.	3/11/20
19913					2/24/23	11.27	86	Tr.													Chr.Nephr.x Hypert.	3/22/23
13075					3/2/20	11.40	226	0													Bilat.Hydro-ureter and Hydronephro-sis	3/22/20
19485					2/22/22	11.46	107	VST.													Chr.Nephr.x Hypert. Chr.Myo.	1/4/23
11210					4/9/19	11.85	99	10													Chr.Nephr.x Ac.Exacerb.	6/23/19
11607					3/14/21	12.86	103	--													Chr.Nephr. Hypert. Ac. Yellow atrophy	3/16/21
2259					2/3/15	14.28	95	--													Ac.Nephr.x $HgCl_2$	2/3/15
9106					12/11/18	14.3	154	VST													Chr.Nephr.x Hypert. Chr.Myo.	10/13/18
15272					3/11/21	10.26	140	--	3/19/21	16.67	232	--									Chr.Nephr.x Hypert.	3/17/21
13375	7/27/21	6.67	49	Tr.	2/28/22	11.92	108	Tr.	3/1/22	17.02	134	--									Chr.Nephr.x Hypert.	3/9/23
1056	9/24/18	5.7	58	8	1/3/19	14.3	116	0	1/5/19	15.	154	0									Chr.Nephr.x Hypert. Chr.Myo.	1/12/19
11715	12/1/19	6.85	94	0	12/4/19	12.20	102	0	2/2/20	15.15	127	0									Chr.Nephr.x Hypert. Chr. Myo.	2/17/20
2833	6/4/18	9.70	86	Tr.	9/24/18	14.6	152	Tr.	12/24/18	15.00	120	Tr.									Chr.Nephr.x Hypert.	12/12/18
10418									2/3/19	15.00	71	--									Ac.Nephr.x $HgCl_2$	2/7/21
Seen at Home									5/16/22	19.25	125	--									Ac.Nephr. Anuria	Still Alive 1/6/24
11857									9/20/19	15.78	117	0	9/24/19	20.18	113	--					Chr.Nephr.x with Edema Hypert.	9/24/19
18871					4/24/22	13.4	101	SPT					12/24/22	21.95	185	SPT					Chr.Nephr.x Hypert.	12/24/22
11839	12/23/19	6.94	52	5.00					11/4/20	19.26	121	SPT	11/12/20	21.12	206	0					Chr.Nephr.x Hypert.	6/13/20
8251	4/25/23	5.45	68	--	3/5/23	10.00	125	--					1/14/23	20.00	208	--					Chr.Nephr.x Hypert.	7/19/23
6166	5/7/18	6.45	45	8	9/27/21	10.06	66	Tr.	3/14/21	18.27	77	Tr.	3/6/22	23.4	132	--					Chr.Nephr.x Hypert.	3/13/22
11652	7/26/21	9.14	66	Tr.	11/3/21	10.71	76	Tr.	1/14/22	16.36	110	SPT	1/3/22	20.8	128	Tr.					Chr.Nephr.x Hypert.	2/25/22
19693	11/13/22	6.8	45	9	10/24/23	10.00	69	4	5/22/23	17.3	122	0	6/23/23	22.2	148	--					Chr.Nephr.x	8/14/23
12515	4/3/21	6.16	42	22					3/4/22	15.38	88	Tr.	3/14/22	20.1	124	Tr.	4/3/22	28.07	266	--	Chr.Nephr.x Hypert.	4/4/22
16584					9/6/21	11.46	83	5	12/25/21	18.09	124	0	1/5/22	22.22	135	Tr.	1/14/22	28.57	188	...	Chr.Nephr.x Hypert. Chr.Myo.	1/17/22

Cases marked with x had uremia during the course of their illness.
Cr. = Creatinin expressed in mgm. per 100 cc. of blood.
B.U.N. = Blood Urea Nitrogen.
Tr. = trace.
S.P.T. = Slightest possible trace.
Pt. Tr. = Faint trace.
V.S.T. = Very slight trace.
Phth. = Phenolsulphonephtahlein excretion.
Ac. = Acute.
Sub. ac. = Subacute.
Chr. = Chronic.
Sub. chr. = Subchronic.
Nephr. = Nephritis.
Hypert. = Hypertension.
Exacerb. = Exacerbation.
Myo. = Myocarditis.
Figures = %.

In the third group (creatinin 15-20 mgm.) there are fourteen cases. Two of these had acute nephritis, induced in one instance by bichloride of mercury. This case died four days later, while the other patient, who had acute nephritis with anuria, rapidly improved and his kidney function soon became normal. He is still alive a year and eight months later. Not one of the twelve chronic nephritics in this group, one of whom had a superimposed septicemia, lived for more than 157 days.

Coming now to the nine cases with chronic nephritis in Group IV (creatinin 20-25 mgm.) we find that not one lived more than 56 days.

In the last group (creatinin 25-30 mgm.) there are two cases of chronic nephritis. One of these died in 1 day and the other in 3 days.

Now, while we believe that a continued retention of creatinin in the blood is a sign of grave danger, we also believe that there are other indications of renal insufficiency which afford the same information. These are the clinical condition of the patient, the blood urea nitrogen and the 'phthalein excretion. We have, accordingly, collected this additional data on our thirty-eight cases and assembled it in Table II. The cases are grouped and numbered exactly as in Table I.

An examination of this table will show that thirty-five of the thirty-eight cases had uremia, which shows that they were extremely ill. Most of these patients had hypertension, and this condition naturally added to the gravity of the picture. Eight had chronic myocarditis, which in some instances, militated against recovery. Further inspection of Table II will show that the blood urea nitrogen was above and the 'phthalein excretion below normal in every instance.

In Group I (creatinin 5-10) the blood urea nitrogen was over forty in all but two. One of these two patients (No. S 9904) had taken bichloride of mercury the same day. She soon developed anuria and uremia and died in three days. The other patient (No. 6264) was known to have had uremia, and was drowsy and nauseated at the time the above findings were made. His condition was aggravated by the presence of a chronic myocarditis. He died in 206 days.

An analysis of the twenty 'phthalein determinations made in the first group shows that all but three were under 10%. Considering now the patients with relatively high dye excretions we find that case No. 15371, who had a 'phthalein output of 30% is still living 2 years and 275 days later. The accompanying high blood urea nitrogen and creatinin figures were found 5 days subsequent to a decapsulation operation, and followed a daily intake of 60 or more grams of protein. His general condition was good, the operation having been done with the hope of stopping renal bleeding. Subsequently the renal function in this case became much better but it has since gradually fallen, and although he works daily at a clerical position, he now has a severe chronic nephritis. Case No. 6264 had a dye excretion of 26%, and although his functional tests were relatively good, his clinical condition as explained above was very poor. Case No. 12515 had a 'phthalein output of 22%. He was known to have had a nephritis for five years. During almost two years of observation his condition had grown progressively worse. This was evidenced by a rising blood pressure, nervousness, a gradually falling 'phthalein excretion, and by a tendency for the blood urea nitrogen, which was normal but once, to rise. This downward trend of his condition occurred in spite of restricted activity, and restricted protein and salt intake. He died 244 days later.

Turning now to Group II (creatinin 10-15 mgm.) we find that the blood urea nitrogen was over 65 in every case. In thirteen it was over 100 and in one over 200. The 'phthalein excretion was determined in eighteen of the twenty-four cases. Only four of them put out a readable amount, and the highest figure was 10%. Case No. 13103 in this group deserves special mention. At the time the findings given under Group II were made, he had an acute exacerbation of a subacute nephritis and was in uremia. He also had an acute otitis media with mastoid tenderness and a mitral stenosis, yet he lived for over two years.

Eleven of the fourteen cases in Group III (creatinin 15-20 mgm.) had blood urea nitrogen over 100, and in no case was it as low as 70. In one it was over 200. None of the eleven cases in this group who were tested, excreted more than a trace of 'phthalein.

The blood urea nitrogen was over 100 in all of the cases with blood creatinin of from 20-25, and in two it was over 200. The 'phthalein output was determined in eight of these cases and in not one did it exceed a trace.

The two cases in the last group had very high blood urea nitrogen figures, being in one instance 188 and in the other 266. Both excreted but a trace of 'phthalein. One died in one, and the other in three days.

CONCLUSIONS

1. Cases of chronic nephritis with blood creatinins of 5 or more may occasionally outlive, by a big margin, the time usually allotted to such cases.

2. In our cases it seemed as if the clinical condition of the patient plus the ordinary blood urea nitrogen and 'phthalein determinations furnished as much information as did the blood creatinin.

I wish to take this opportunity to thank Dr. James P. O'Hare for his help in the preparation of this paper.

TO PREVENT THE TURNING OF ROUND LENSES

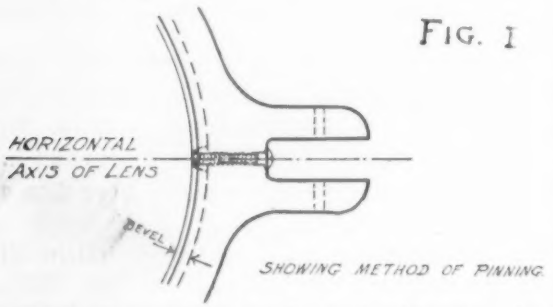
BY DAVID W. WELLS, M. D.

THE use of round eyes for spectacle frames has produced a new possibility of glasses getting out of adjustment, by the turning of the lens in the frame.

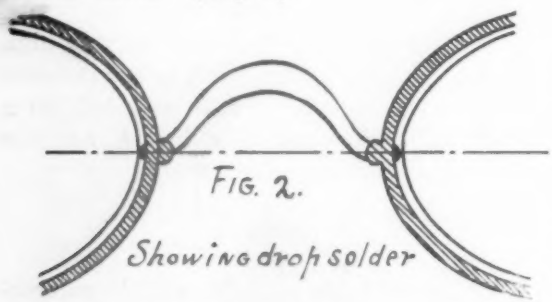
In prescribing lenses for the correction of astigmia the axis of the lens is ordered to be placed at a certain degree of the circle, and if such a lens twists in the frame, it causes a misfit, so that the lens is worse than useless. Celluloid and shell frames give the most trouble as they swell and shrink with atmospheric changes, and metal rims are not proof against this happening.

To show how seriously this accident may disturb the wearer, the writer had one patient who returned from Europe on account of eye strain and it was discovered that the symptoms were due entirely to the twisting of a round lens.

Several years ago, in collaboration with an optician, the writer devised a method of overcoming this trouble by fitting a screw or plug into the bevel of the frame, which necessitates filing a notch in the lens before it can be inserted. (Fig. 1)



With all metal rims a drop of solder is melted into the bevel. (Fig. 2)



During the war the British army frame was protected by crimping the bevel at the axis of the cylinder.

At the 1919 meeting of the A. M. A. the Section on Ophthalmology on motion of the writer adopted a resolution, "recommending that frames with circular lenses be furnished with some device to prevent rotation of the lenses in their frames." Later the New England Ophthalmological Society voted to request the Society of Opticians to adopt the pinning of all round lenses. Notwithstanding all this effort it is still very difficult to secure any universal adoption of the idea. The writer has endeavored to secure the coöperation of the frame manufacturers, and quite recently Bausch & Lomb Optical Co. has promised to furnish all round frames with some device to prevent turning. If the other manufacturers follow suit, success is assured. In the meantime much could be accomplished if the medical profession would broadcast the idea.

If the spectacle wearers knew the danger, they would insist on being protected.

BOOK REVIEW

Annals of Roentgenology, Volume Four. Normal Bones and Joints, Roentgenologically Considered. Two Hundred and Twenty Roentgen Ray Studies on Sixty-one Full Page Plates and Thirty-four Text Illustrations. By ISIDORE COHN, M.D., F.A.C.S., Professor of Clinical Surgery, Tulane University; Associate Senior Surgeon, Touro Infirmary, New Orleans, La. With a Foreword by Rudolph Matas, M.D., Professor of General and Clinical Surgery, Tulane University, New Orleans, La. New York: Paul B. Hoeber, Inc. MCMXXIV.

This important volume opens with a most scholarly foreword by Dr. Rudolph Matas, interesting historically, clear in its appreciation of the limitations and value of the roentgenological method, and strong in the emphasis which it places upon the danger lurking in the growing tendency to less thorough clinical examination and a more general dependence upon this rapid and technical method of diagnosis. The inevitable result of such dependence must be to dwarf the faculty of observation and make less keen the appreciation of the significance of clinical signs and symptoms.

The main body of the book is made up of plates and descriptive texts illustrating the development of the epiphyses in all the main joints of the body at significant ages. A review of the literature on the subject of these centers of skeletal growth, conclusions based on the study of the normal joints in question, and an evaluation of the importance to be attached to such study from the surgical standpoint precede each chapter. The chapter on the important elbow joint is very full, including many case reports. It is almost a treatise on the subject of fractures and epiphyseal separations in this region.

It is perhaps hardly fair in a book the title of which is "Normal Bones and Joints" to wish that some illustrative consideration had been given to that group of departures from normal epiphyseal growth which have been described in the tibial tubercle under the name of Osgood's or Schlatter's disease, in the hip as Legg's, Calvé's, or Perthe's disease, and in the os calcis and other regions as apophysitis. These little understood departures from normal are so common and are so often not recognized and wrongly diagnosed that we hope a section illustrative of these conditions and perhaps the supernumerary bones of the foot may be added to a future edition.

The author has made an extremely important contribution to medical literature. As a reference book in cases of fracture or suspected fracture and epiphyseal separations it should prove invaluable. The typography and cuts leave little to be desired.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 10451

First entry. An Irish-American truant officer said to be fifty-one entered December 1 for relief of severe diarrhea.

F. H. His father died of heart disease. Both his children died with malnutrition.

P. H. For years he had had a chronic cough with sputum, worse at night. He had night sweats and occasionally felt feverish. For five years he had urinated two to four times at night. For four years he had tired more easily than previously. He had an acid bad taste in the mouth. His bowels were regular with the use of agar agar.

P. I. Three days before admission he took a cascara pill for constipation, and six hours later had a copious watery movement. He had had ten to fifteen movements a day until the eight hours before admission, when he had had none. During and after the movements he had severe griping pain in the lower abdomen, not radiating, and relieved by nothing he tried. The stools contained much mucus; no blood.

P. E. An emaciated man looking considerably older than fifty-one. Pyorrhea. Chest slightly barrel-shaped. Apices retracted. Rare dry or moist râles throughout. Dullness between the scapulae, more on the right. Apex impulse of the *heart* 9 cm. to the left, 1½ cm. outside the midclavicular line. No enlargement to percussion. A_2 accentuated. First sound slightly impure at apex. Artery walls markedly palpable. Brachials tortuous. *B. P.* 180/110-160/100. *Abdomen.* Superficial veins prominent. Visible peristalsis below the umbilicus. Unlocalized tenderness in the lower abdomen. *Genitals.* Right hydrocele the size of an egg, transmitting light. Small nodule, right testicle. Small reducible right inguinal hernia. *Rectal examination.* Several large internal hemorrhoids. *Extremities* negative. *Pupils.* Sluggish reactions to light and distance. *Reflexes* otherwise normal.

At entrance *T.* 99.8°, *P.* 98, afterwards *chart* not remarkable. *Blood* and *urine* normal. *Wassermann* negative. *Stools.* Guaiac positive at all of three examinations, very strongly at the first.

Orders. December 1. Liquid diet with milk. December 2. Soapsuds enema. Opium suppository gr. i. December 3. Tannic acid suppositories gr. v one i. d. December 4. Mineral oil ℥ i.

By December 3 the diarrhea had ceased. Gastro-intestinal X-rays and gastric analysis were felt to be unnecessary. December 5 the patient was discharged relieved.

Second entry. April 29, two years and four months later, he re-entered. His age is now given as sixty-seven. Twenty-four hours before admission he "fainted" and fell. The history was given by his sister.

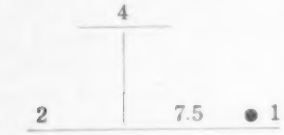
Additional P. H. He was not strong as a child. He had frequent indigestion. Lately he had had severe constipation and had used many forms of cathartics. For some months he had felt weak and dragged his feet. His wife had had one stillbirth. For six years he had lived alone in a house doing most of the housework himself.

Habits. Good. He took aspirin for headaches.

P. I. For over seven years he had been treated by several doctors for arteriosclerosis. Three years ago he began to have morning headache and had several attacks of vertigo on rising. The headaches lasted until noon until three weeks ago; then they began to last all day. Two weeks ago his blood pressure was 230. By dieting it was reduced to 195 a week ago. Several months ago his vision began to fail markedly. He had had a week's vacation ending two days before the onset of the present illness, and had improved except for the headache. The day before admission while at his work he felt a sensation of apprehension, and hurried to get to his destination. There he collapsed and lost consciousness for a short time. On recovering he had extreme nausea and vomiting and violent headache. At the time of admission to the hospital he was perfectly conscious; no one noticed any paralysis.

P. E. Slightly thin. Head retracted and slightly rotated to the right. No paralysis, but paresis of left side of mouth and face, left eye, external rectus, upper lid, muscles of left side of neck and shoulder and left arm, with uncertainty in movements of eyes, tongue and left arm. Diminution in sensation of mandibular branch of facial nerve. Unable to rotate the left hand or to distinguish objects put in the left palm. Joint sensation present. Left sclera slightly injected, and corneal sensation present but diminished. Nasal septum and entire nose deviated to the left, with obstruction of the left nostril. Tongue protruded slightly to the right with a little uncertainty of movements. Cervical and inguinal adenopathy. *Lungs* clear except for dullness at the bases behind. Large

skin veins in axilla. *Heart* moderately enlarged. Loud ringing sounds. Apex in axilla. Percussion measurements as shown in the diagram. A_2 accentuated. A short rough systolic murmur heard over the base. Mitral first sound loud. Midsystolic heard at the apex only. Arteries hard and exceedingly tortuous, with excessive lateral movement with the high tension of each pulsation. *B. P.* 220/115-115/55. *Abdomen.* Prominent veins in lower quadrants. *Rectal examination.* Prostate firm but not enlarged or nodular. *Genitals.* Many telangiectases of scrotum. *Pupils.* Right greater than left. Both slightly irregular. Reacted little to light and distance. *Fundus examination* difficult because of constant jerking lateral and rotary movements of eyeballs. Tendency of eyes to look to right and downward. Retinae injected. Arteries small, pale, tortuous. Veins dilated, dark red, tortuous. An occasional small splash-like hemorrhage. Discs pale. Edges indistinct in nasal portions, but central part clearly defined and lamina cribrosa seen.



T. normal the day of admission, rising to 106.2° the day of death. *P.* normal except for one rise to 126 May 1. *R.* 17-36. *Urine.* Amount not recorded, sp. gr. 1.016-1.020, cloudy at one of two examinations, a very slight trace of albumin and three or four red blood cells at the first, occasional leucocytes at the second. *Blood.* Hgb. 100%, leucocytes 17,800, polynuclears 91%, some vacuolated mononuclears. *Wassermann* negative. *Non-protein nitrogen* 29.9 mgm. *Lumbar puncture.* 10 c.c. of reddish slightly cloudy fluid. Initial pressure 155. Jugular compression 270, free rise and fall. After withdrawal of 5 c.c. 125, after withdrawal of 5 c.c. more 115. Reds 21,000, leucocytes 20, alcohol and globulin positive. Wassermann negative. Total protein 286. Goldsol 0255555533.

Orders. April 29. Absolute rest in bed. Fluids and orange juice ad libitum. Soft solid diet. Nitroglycerin gr. 1/100 every two hours throughout the night. (Changed at 3 a. m. to 1/200.) Take B. P. every two hours through the night. Report any unusual change or sudden drop of B. P. below 150. Opium suppository gr. ½ every four hours. Erythrol tetranitrite gr. 1/6 every four hours during the day. Nitroglycerin gr. 1/200 every two hours. Morphia gr. ⅛ s.c. every four hours. (Not given.) April 30. Caffein gr. xv intramuscularly given at 11 a. m. and 3 p. m. B. P., pulse and respiration every four hours. Opium suppository gr. ½. Atropin gr. 1/75 s.c. Morphia gr. 1/6 with atropin gr. 1/150 at 3 p. m., repeat morphia gr. 1/6 s.c. every three hours p.r.n. May 1. Caffein gr. xv intramuscularly every four hours. Morphia gr. ⅛ s.c. every three hours p.r.n. for restlessness. (Not given.) Atropin gr. 1/150 s.c. p.r.n. for cough or excessive secretion in throat. Cracked ice by mouth. (Not given; patient choked.)

The morning of April 30 a nerve consultant reported, "Reflexes increased on the left. Leg spastic, with increase in knee-jerks, clonus and Babinski. Some spasticity on right, with slight Babinski. Patient losing ground rapidly." The patient breathed rapidly, was drowsy, and had some stiffness of the neck. The night of April 30 the knee-jerks were not obtained and there was Babinski on the left. The next morning he was somewhat better. The knee-jerks had returned. At midnight the edema of the lungs was increasing, the breathing was stertorous, the pulse rapid, the blood pressure, which had been rising all the evening, suddenly dropped to 115. The next morning the patient died.

Discussion

by dr. richard c. cabot

notes on the history

Diarrhea is rather an uncommon presenting symptom or reason for entering this hospital. I should not suppose a dozen people in the course of a year come in for it. Most of the milder diarrheas can be looked after perfectly well at home. And then we have learned a peculiar thing about diarrheas here. Any case of chronic diarrhea sent into the hospital from outside always gets well in the wards and usually relapses afterward. They get well but they do not stay well. Probably the same thing could be accomplished by sending them away to the seashore or to the mountains. The change of food and water has an immediate temporary but no permanent effect. Dr. Robbins has probably had the same experience.

Dr. W. B. Robbins: Yes; in two or three days they get well.

Dr. Cabot: It is apt to come rather hard on a private physician, because apparently he can't do what the hospital can, although the hospital really does nothing but furnish a change of food and water. It is remarkable in any type of diarrhea, whether tuberculous or any other, what this change will do.

Of course this history of a chronic cough makes us think of tuberculosis and also of tuberculous enteritis. It is very important, however, to point out that the patient may have pulmonary tuberculosis and also have an intractable diarrhea which is not tuberculous. I have seen patients, their families and physicians become discouraged and give up trying to treat a case of pulmonary tuberculosis with diarrhea because they said, "This is no use; nobody has ever cured a case of tuberculous enteritis." But many of these cases of diarrhea with phthisis, proved post-mortem here, have not been due to tuberculous enteritis. Of course it is not proved that this patient has tuberculosis. This may be

a heart cough or bronchiectasis or anything else.

We may assume that the cascara had nothing to do with the subsequent events, although the patient would be pretty sure to think it did. We cannot help at his age thinking of neoplasm, which often begins with a diarrhea, which must have its first symptom some time and may come to light suddenly. A man of this type does not often have a nervous sort of diarrhea, the mucous colic, colica mucosa, which we see so much in young women. I do not think that needs to be much considered, although the fact that the stools contained much mucus and no blood cannot fail to bring it to mind. Then there is of course the thing we always fear, chronic ulcerative colitis, a trouble incurable so far as I know. Although its symptoms may disappear for a number of years the lesions are there and symptoms may recur.

NOTES ON THE PHYSICAL EXAMINATION

On physical examination we have nothing definite to support the guess of tuberculosis which came into our minds. There is a perfectly definite, presumably permanent hypertension, with which will be associated arteriosclerosis and an enlarged heart, very possibly some kidney lesion.

Visible peristalsis always makes us think of intestinal obstruction, but it should always be remembered that it can come in perfectly normal patients with a thin abdomen in case there is vigorous peristalsis going on.

There was no evidence, I take it, of tuberculosis or any other significant disease.

The guaiac was positive although no blood had been seen.

They did not on the whole think he had a neoplasm or any other organic lesion. His diarrhea cleared up and they let him go. He returns two years and four months later, so we need not suppose that this diarrhea is of any special importance in the condition that killed him.

The history does not say that he dragged one foot more than the other, although in a person who falls at his age we always suspect hemiplegia.

I wish I knew what the "several doctors" did for him. I know nothing to do for arteriosclerosis. I do not believe there is any treatment for it. What do you do for arteriosclerosis, Dr. Robbins?

DR. ROBBINS: I have always felt that it is a good thing to have. I believe that nature does that to save the person, that if he doesn't have it he will burst, and that arteriosclerosis is a natural process which ought probably to be let alone. It is putting the cart before the horse to try to treat arteriosclerosis.

DR. CABOT: That is a very cheering view, since we do not know anything to do about it. I do not know that I should consider it a good thing. But I have a very low opinion of anybody who has treated it for seven years.

This is the sort of headache one gets with chronic nephritis, and the general outline of this case as we get it up to date is the conception more and more emerging of chronic nephritis as the result and not the cause of hypertension. We start with hypertension, the Lord only knows why; we gradually develop a form of chronic nephritis, not as the cause of that hypertension but as the result. Nobody can prove this belief, but so far I share it. I should say of hypertension as Dr. Robbins said of arteriosclerosis,—we do not know how to do anything for it, and presumably it is a good thing.

"Unable to rotate the left hand or to distinguish objects put in the left palm." That is much the best way to put that, instead of the very long phrases that we often see (adiadokokinesis, astereognosis, etc.)

We do not need to connect the deviation of the nose with the brain lesion. Dr. Algernon Coolidge pointed out long ago that practically everybody, if we look carefully, has some deviation of the septum; it is only a question of degree. Yet it is true that in hemiplegia the nose sometimes seems to be deviated.

The diagram shows how little use cardiac percussion is. We know that the apex is out in the axilla, and yet percussion shows dullness at the nipple.

Here are the retinal evidences of arteriosclerosis and high blood pressure which we often see in such cases.

The chart shows a steadily ascending temperature. It climbed as soon as he got here. The pulse and respiration did not go up much.

We have nothing very distinctive about the urine.

The blood count is of no importance.

The non-protein nitrogen is normal.

There was an admixture of blood in the spinal fluid, so we do not pay much attention to what we find. The colloidal gold solution test was not characteristic of anything that I know.

DIFFERENTIAL DIAGNOSIS

We have a case I should say essentially of hypertension with a cerebral complication, with arteriosclerosis and a big heart, and very possibly some kidney lesion, although the urine does not prove it. It is essentially a death from apoplexy whether there is actual hemorrhage or not. Whether we find a hemorrhage or not there is certainly a vascular lesion. Whether an artery is blocked or spastic or broken, we have a vascular lesion of the right side of the brain which is the cause of death. We shall find a hypertrophied and dilated heart, and general arteriosclerosis. On the evidence I do not believe there will be an obvious nephritis. There should be foci of arteriosclerotic atrophy in the kidney, but not an actual nephritis.

One of the things which interests me in these

cases, although it has never been explained to my satisfaction, is edema of the lungs. Practically every case of coma, whatever its cause, shows at necropsy edema of the lungs. We go to a case of apoplexy. We try to hear the heart. We can hardly hear the heart because the lungs are stuffed full of râles. But if the patient gets over it this edema disappears and does him no harm. That it does him no harm is the only practical point about it that I know. It is I think the same phenomenon of acute pulmonary edema that is sometimes seen in arteriosclerosis without any chronic symptoms of heart failure. With acute pulmonary edema the patient sometimes drowns in his own lung fluid; or it may go away without treatment and the patient get well.

DR. ROBBINS: Do you think it is justifiable to use atropin in those cases?

DR. CABOT: Perfectly, but I do not think it will do any good. I was present once, with several well known physicians, at a discussion about edema of the lungs. One man said he knew just what would cure it,—nitroglycerin. Another said atropin, that would cure it every time. A third said adrenalin. Certainly those things are not identical in action. My guess is that none of them cures it. I do not think we can touch it. I have seen a good many of those cases get well without any particular medication, that is, without any that one supposed to be effective.

DR. ROBBINS: The blood pressure is pretty high, and we do not seem to have much to account for it. Have you any suggestion in this case as to why he should have high blood pressure?

DR. CABOT: I think high blood pressure is a progressive disease; it may rise higher still because of the occurrence of cerebral hemorrhage. But it has recently been proved that a great many cases of cerebral hemorrhage do not have high blood pressure, so that I am not sure that his apoplexy really adds anything to the hypertension that he had before.

DR. ROBBINS: Wouldn't you expect to find more in his urine than he has?

DR. CABOT: My present views on that are that it depends on how long it has gone on, that if hypertension lasts long enough it always produces nephritis, but if it has lasted only a few years the kidneys can be perfectly sound.

DR. ROBBINS: And that essentially hypertension is not the result of nephritis.

DR. CABOT: I think we have the cart before the horse there.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

General arteriosclerosis with hypertension.
Cerebral hemorrhage (right internal capsule intraventricular).

DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertension.
Cerebral hemorrhage.
Arteriosclerosis.
Hypertrophy and dilatation of the heart.
Edema of the lungs.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Arteriosclerosis.
Arteriosclerosis of the vessels of Willis.
Cerebral hemorrhage, left cerebellar hemisphere.

2. *Secondary or terminal lesions*

Pneumonia and edema of the lungs.
Hypertrophy and dilatation of the heart.

3. *Historical landmarks*

Slight chronic pleuritis.
Obsolete tuberculosis of the bronchial lymph glands and of the apices of the lungs.

DR. ALBERT E. STEELE: There are a few things that are interesting. One is the seat of the cerebral hemorrhage. The record states that the greater part of the left cerebellar hemisphere was disintegrated brain tissue and blood clot. The outer border where the cerebellum comes near the fourth ventricle showed a slight connection with the fourth ventricle, and the fourth ventricle contained a small amount of blood clot. The other ventricles and the rest of the brain were negative. There was an arteriosclerosis of the aorta and its branches and the vessels of Willis.

The lungs showed considerable edema, a small patch of pneumonia and a slight obsolete tuberculosis.

The heart was slightly enlarged; weight, 430 grams. The myocardium was thick, the valve circumferences normal. There was no sclerosis of the coronary arteries.

The kidneys weighed 235 grams. The cortex was normal in width. Microscopic examination of the kidney was negative.

DR. CABOT: If I had had any confidence before in my ability to carry out the supposed principles of cerebral localization I should have been very much disappointed here. But I learned long ago that I do not know anything about cerebral localization. When even the most expert surgeons with neurologic advice will go in on the wrong side, or above the tentorium when the lesion is below it, we clinicians cannot expect to hit it right. I do not know what has become of the supposed localization that we used to be taught. This hemorrhage should have been on the other side, of course, and it should have been in the brain and not in the cerebellum.

DR. ROBBINS: Do you suppose that blood in the spinal fluid was from the cerebellar hemorrhage?

DR. CABOT: I think it quite possible.

CASE 10452

A six-months-old boy of Greek parentage was brought to the hospital June 6. The complaint was fever of three weeks' duration.

F. H. Good. Two other children were living and well. There had been no miscarriages, stillbirths or deaths.

P. H. The child was normally delivered at full term and at birth was normal, weighing 10½ pounds. He took the breast well, but was weaned on account of illness of his mother and put upon a formula of whole milk 10 ounces, water 10 ounces, cane sugar 1½ large tablespoonfuls. Then as his mother thought he was not gaining enough he was put upon Mellin's food, but had diarrhea and was changed again to a diluted milk. The present formula was whole milk 16 ounces, water 6 ounces, cane sugar 6 large tablespoonfuls. He did well and gained upon this until the present illness. At five and a half months he held up his head, but was now unable to do so. He had had no serious illness.

P. I. Three weeks before admission he began to cough and had slight fever which stopped after a few days. Two weeks before admission these symptoms returned and persisted. Two days ago his mother noticed yellow discharge from the left ear. He continued to eat well. His bowels were regular.

P. E. Poorly nourished. Skin and mucous membranes normal. Posterior fontanel closed, anterior admitted two fingers, level, not tense. Serous discharge from left ear. Right ear showed some injection of Shrapnell's membrane, no bulging. Throat injected. Tonsils moderately enlarged. Palpable submaxillary glands. *Heart* rapid, otherwise normal. *Lungs.* Resonant throughout. In the left axilla and right back at the spine of the scapula breath sounds were suggestive of bronchovesicular. No râles. *Abdomen* normal.

T. 100°-103°, with a terminal rise to 106.9°. *P.* 131-188, with a terminal rise to 200. *R.* 41-100. *Urine.* Normal color. The slightest possible trace of albumin at one of three examinations. Sediment negative at the single examination. *Blood.* Hgb. 65%-70%, leucocytes 10,800-32,000, polynuclears 64%, reds normal. *Wassermann* negative. *Pirquet* slightly positive to human. *Stools* negative at three examinations.

Orders. June 6. Individual precautions. Dry wipes to left and boric irrigation to right ear every three hours. Formula, boiled water 10, whole milk 20, dextri-maltose 5, six feedings of ounces v each. Adrenalin chloride 1/1000 one part, argyrol 10% eight parts, three drops in each nostril every three hours. June 20. Chloral hydrate gr. iv for convulsions.

The visiting physician noted rickets evidenced by early rosary. June 9 there was some evidence of involvement of the right upper lobe, less of the middle lobe. The left ear was discharging freely and the right was involved. An ear consultant did a paracentesis. No pus was obtained. June 13 there were signs of consolidation of the right lower lobe. The left lower lobe showed no signs of consolidation. Only a few moist râles were heard. June 20 X-ray showed absolute dullness involving the upper two-thirds of the right lung field with irregular areas of diminished density at its center. Below this area the lung was rather mottled, although less dense. The entire left lung field presented a mottled appearance. Both diaphragm shadows were normal in outline and position. There was displacement of the heart to the left. That day there were a few pinhead-sized petechial spots on the face, head and ears. A blood culture showed bacillus epidermides communis and Gram-negative bacilli. An ear consultant reported, "Left ear, profuse purulent discharge. Recommend hot syringing every four hours. Right ear, serosanguineous discharge. Recommend dry wipe t. i. d." June 21 another ear specialist reported, "Both ears drain freely. No signs of mastoiditis. Continue wipes of both ears." Culture from fluid obtained at a chest tap that day showed a few staphylococci. One of three cultures from chest fluid obtained June 22 showed a moderate growth of staphylococci.

June 23 there was definite opisthotonos. The fontanel was tense but not bulging. The extremities were rigid. A lumbar puncture that day gave 20 c.c. of clear colorless fluid, initial pressure 280 mm., final pressure 40 mm. Crying increased the pressure 70 mm. Respiratory oscillation 4 mm., pulse oscillation 1 mm. Albumin and globulin tests were very strongly positive, Wassermann negative, goldsol 1222233110, cell count 72 per cu. mm., no organisms, culture negative, sugar 12 mgm., total protein 303 mgm. The child's condition was poor. He refused practically all feedings. 200 c.c. of saline was given intraperitoneally.

June 23 a second lumbar puncture gave clear slightly greenish-yellow fluid, 85 red blood cells and 70 leucocytes per cubic mm., total protein 438 mgm., sugar 15, goldsol 1222233333.

June 24 the child died.

DISCUSSION

BY DR. FRITZ B. TALBOT

NOTES ON HISTORY

The feeding history in this case is not remarkable. The child seems to have done quite

well up to the age of five and a half months. The present illness commenced with an infection of the nasopharynx and middle ear, and the physical examination on entrance did not suggest anything other than an infection of the nasopharynx.

NOTES ON THE PHYSICAL EXAMINATION

The slightly positive skin tuberculin test on entrance is of some significance in a baby of six months and indicates tuberculous infection. In a series of cases investigated in this clinic several years ago it was found that where there was a definitely positive skin tuberculin in infants under fourteen months of age there was almost always a fatal outcome.

The baby had a slight rosary, indicating commencing rickets.

DIFFERENTIAL DIAGNOSIS

Three days after entrance there was some evidence of involvement of the right upper lobe of the lung. The picture was then one of a nasopharyngitis, bronchopneumonia and otitis media. During the first weeks of the illness this might have explained the whole condition. The temperature, however, remained elevated longer than it should have if the case had been a nontuberculous bronchopneumonia, and as time went on there were progressively increasing lung signs which on June 20 were shown by the X-ray to be very extensive. If the temperature had come down to normal and the baby had shown decided improvement at the end of ten days to two weeks the case then would have been a case of bronchopneumonia. The persistence of the signs of infection, however, and the increase in physical signs in the lungs obviously indicated a more serious etiology.

As the case proceeded the ears continued to discharge, but drained freely. Petechial spots on the head and face appear in the later stages of many diseases. If these spots had been shotty and of a brownish-red color one might have suspected them of being tuberculids, but since they were not they were considered to be an accompaniment of chronic wasting.

On June 23 symptoms of involvement of the central nervous system commenced. There was definite opisthotonos, and the extremities were rigid. The lumbar puncture gave a clear colorless fluid under increased pressure showing an increased cell count. This condition persisted up to June 24, when the child died.

The chronicity and advance of symptoms are characteristic of tuberculosis, and when a meningitis with a clear cerebrospinal fluid is superimposed upon the other symptoms the diagnosis of generalized tuberculosis becomes more certain. It is hardly conceivable that an encephalitis would complicate an entirely different disease. It is almost the rule that during childhood symptoms in different parts of the body can be explained by one common etiology.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Tuberculosis.
Bronchopneumonia.
Pulmonary tuberculosis.
Tuberculous meningitis?
Miliary tuberculosis.

DR. FRITZ B. TALBOT'S DIAGNOSIS

Otitis media.
Tuberculous bronchopneumonia.
Tuberculous meningitis.
Miliary tuberculosis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Tuberculosis of right lung with cavity formation.
Miliary tuberculosis of the lungs, liver, spleen, kidneys and peritoneum.
Tuberculous meningitis.
Tuberculosis of the bronchial, mesenteric and retroperitoneal lymph glands.

2. *Secondary or terminal lesions*

Purulent otitis media.
Fatty metamorphosis of the liver.

3. *Historical landmarks*

Chronic pleuritis.

DR. RICHARDSON: In the right external auditory meatus there was considerable purulent material, and in the left a small amount. Cover glasses from both showed leucocytes and diplococci, but were negative for tubercle bacilli. The pia along the upper part of the cord, medulla, pons, above the optic chiasm, out the fissures of Sylvius, and between the frontal lobes presented a rather thick pale yellowish-gray homogeneous exudate, somewhat granular in places. The left middle ear contained considerable purulent material, and the right a small amount. Cover glasses from this material were negative for tubercle bacilli. The brain tissue was pale and generally rather soft.

The abdomen was distended. There was subcutaneous fat in minute amount. The muscles were thin, soft and pale. The subcutaneous tissue was moist.

There was no fluid in the peritoneal cavity. There were numerous smaller and larger tubercles scattered over the peritoneal surface of the diaphragm.

There were a few scattered, slightly enlarged mesenteric glands, many of which showed small caseous areas. The retroperitoneal glands in the region of the head of the pancreas and lesser omentum were slightly enlarged and showed small caseous areas in places. The anterior margin of the liver was 3 cm. below the costal border in the right mammillary line. The

diaphragm was at the sixth rib on the right, the sixth interspace on the left.

The right lung was bound down by old adhesions postero-laterally to the right and anteriorly in the region of the upper half. The lower end of the trachea and the right primary bronchus presented a dirty red granular mucosa coated with yellowish granular purulent material. In the region of its first branch the wall of the right primary bronchus presented an irregularly margined opening one cm. in diameter which led into a cavity in the upper lobe of the right lung extending across it about midway to the right anterolateral surface. The cavity was about 4 cm. by 5 cm., with trabeculated disintegrated walls, and contained much granular caseo-purulent material. In the region of the apex and the tissue elsewhere of the upper lobe there were innumerable smaller and larger discrete and confluent tubercles with small caseous areas in places. The middle and lower lobes showed a similar condition, but much less extensive. In the apical region of the left lung there were tubercles. The tissue elsewhere showed scattered through it smaller and larger discrete and confluent tubercles. Tubercles were scattered through the lower lobe, but were much smaller than those in the upper lobe. The tracheal and bronchial glands were considerably enlarged, up to 3½ cm. across, and showed marked caseation.

The liver showed scattered over it rather numerous tubercles. In the substance there were a few tubercles and in a few places small yellowish rings of tuberculosis around the cut ends of the bile ducts.

The spleen showed a few old adhesions to the diaphragm. There were tubercles on its surface and in its substance.

The kidneys showed a few tubercles on the surface and in a few places in the substance of the organ.

DR. TALBOT: How often do you find cavities in the lungs of infants? My impression is that cavity formation is relatively uncommon at this age, because when the disease becomes advanced it usually becomes a meningitis before cavities have an opportunity to form.

DR. RICHARDSON: Our experience here is limited, for we see few infants. The distinct cavity formation found in this case seems, judging from the material here, to be very unusual.

CASE 10453

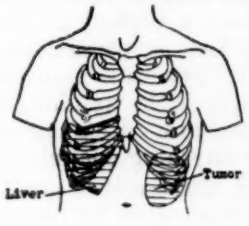
An American housewife of sixty-five entered March 18 for relief of pain on the left side.

F. H. Her father died of heart trouble at seventy-six. At fifty he had "epileptic fits," cured by medical treatment. Two children of the patient died when a few days old.

P. H. She had mumps, measles, diphtheria and chickenpox in childhood. Ever since she was seventeen she had had occasional attacks of vomiting after meals. The vomitus was merely clear stringy mucus and water. Her bowels were always constipated. She had two miscarriages. After the birth of her last child she was ill for months with an "ovarian cyst" and some sepsis. She passed the menopause at thirty-eight. At fifty-seven she had pellagra for a year. She had frequent sore throats and bronchitis. She had some slight dyspnea on exertion and occasional slight edema of the ankles, especially the left.

P. I. She had "always" had to urinate once at night. Seven months ago she began to notice increasing weakness and a dull ache in the left back and hip and down into the groin, relieved by lying on the left side. This persisted without much change for a month or two. Then she began to have severe sharp knife-like pain in the same region radiating toward the genitals or the left leg, occurring at night, lasting about three hours. Some hours after it stopped she passed several large clots of blood with urine. After this she felt well except for slight weakness. Some weeks later she had another attack of exactly the same character except that instead of passing clot afterward she had very dark red urine for several days. A week ago she awoke in the morning with a third attack, passed several clots, and finally got clogged up with another clot. A physician recommended by telephone a sitz bath, which enabled her to pass the clot and then to urinate. She had much distension. Evacuation of the bladder gave relief. Two days ago she was in pain all night with a fourth attack. She had a chill, and in the morning again passed clots. Ever since this attack she had had marked hematuria. She worked until nine days ago. She thought she did not feel so weak as she had at the onset of the trouble. Since September she had lost some weight, but not over ten pounds. For two months she had had some burning micturition. Recently she had urinated 6-8 times by day, three times at night. Her urine was occasionally cloudy.

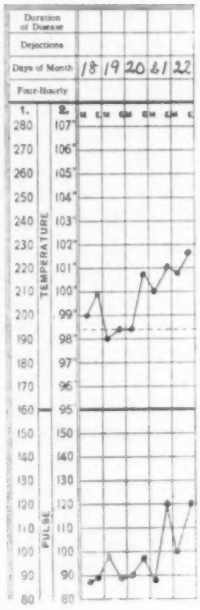
P. E. A dry, thin, wrinkled old woman. Skin of face yellow. Sclerae not yellow. Apex impulse of the *heart* 8½ cm. from midsternum. Midclavicular line 9 cm. No enlargement to percussion. Sounds loud, but first sound at apex abnormally short. Loud systolic murmur heard all over the precordia and in the axilla and neck, loudest in the third left interspace at the edge of the sternum. *Lungs* clear except for a few squeaks at the apex and base at the end of deep inspiration.



Abdomen. Liver from the fifth rib to 2 cm. below the costal margin. Edge felt. A mass

(see diagram) filling the left abdomen, moving on respiration, slightly irregular, firm, somewhat tender, could be felt between the hands when one was in front and the other at the costovertebral region. Costovertebral tenderness. Resonance over tumor anteriorly.

T. and *P.* as shown in the *chart*. *R.* normal. Before operation *urine* bloody at all of three examinations, amount not recorded, sp. gr. 1.017-1.012, a very slight trace to a trace of albumin and very many red blood corpuscles at all, leucocytes at one; *blood*, hgb. 60%, leucocytes 11,300-11,400, polynuclears 80%, reds 3,960,000, achromia and poikilocytosis, platelets moderately increased. *Wassermann* not recorded.



Operation was done March 21. The patient was in considerable shock after it. Transfusion of 500 c.c. of blood was done. March 23 she died.

Discussion

BY DR. EDWARD L. YOUNG, JR.

I should assume there was more sepsis than ovarian cyst to this illness.

A habit urination of once or even twice at night is not uncommon.

Considering the fact that any renal lesion can have any symptom we are not necessarily very far along on diagnosis from the history. What we are pretty sure of here is that this was trouble in the urinary tract because of the hematuria associated with pain. The mere fact that that pain was what we call renal colic does not prove that it was in the urinary tract. But the fact that following the pain and with the pain there was hematuria is the thing that clinches it. Of course in the presence of blood the albumin means nothing.

Now as to the question of diagnosis and treatment. There are several things here that I should myself want to know before I should be willing to operate. This is a patient of sixty-five who has a tumor which is presumably a tumor of the kidney. Her general condition is only fair. She has lost a little weight. She has lost a good deal of strength. I assume that this heart does not show anything special.

Dr. W. B. Robbins: I suppose it is a rather weak flabby heart. I should want to have her worked over very carefully, with that very short first sound and the murmur,—I believe she has arteriosclerosis with a weak heart.

Dr. Young: She has some anemia because of loss of blood or because of the tumor itself or both. What are the other things? There is no record of X-ray, blood pressure, cystoscopy.

Miss Painter: They planned for a pyelogram, but did not make it. The blood pressure was 148/84.

Dr. Young: The reason I ask that is this: With varying conditions which may be present there might well be a decision to leave her alone in view of her age and general condition. What are the things this might be? They have assumed that it is kidney. Of course the only two things of that size that should be here are spleen and kidney. They have noted that the colon is in front, that the mass goes through to the back. Both of these things point to the kidney. A spleen of this size should have a definite edge and a notch. So we shall assume that kidney tumor is right. The first thing we think of is malignant disease. Hypernephroma is the most common. She has the three so called cardinal symptoms of pain, tumor and hematuria. Hypernephroma of that size at her age is pretty definitely inoperable in the sense of curing even if it can be removed.

It might be congenital cystic kidney. Those are generally bilateral, but in a certain percentage of cases the disease may be so slight on one side and so great on the other that the tumor may be the main symptom. It is because of that that I should want to know the total red test of the kidney. Because of course the diagnosis of congenital cystic kidney is the diagnosis of chronic nephritis plus tumor. The blood pressure is no higher than she is entitled to carry. But a cystoscopy with pyelogram would help differentiate. A congenital kidney can cause pain and bleeding such as this woman had. If it is congenital kidney presumably there is damage on the other side, and I think operation would probably be a poor treatment. If washing out the pelvis would not stop bleeding, a much less severe operation, the multiple punctures of Rovsing, might accomplish as much as nephrectomy would.

We have no X-ray, so I do not see how they can prove that this is not a blocked kidney from a calculus with a damaged kidney and a mass back of it. It is true that there is no pus in the urine.

Dr. Robbins: If there were a block in the left kidney we might get a complete block and no pus.

Dr. Young: In that case we ought not to get so much hematuria. We get an acute congestion if the undamaged kidney is suddenly asked to do all the work, but I do not think we should get so much bleeding as there has been all the time. Although it is possible I do not think it probable.

A tuberculosis also ought to have more pus than this woman has had, but we cannot rule out tuberculosis on such evidence as we have here. Tuberculosis at sixty-five is unusual, but

I have seen it. For that reason it seems as though we ought to have a little more evidence before we go ahead to do anything, because of the age, general condition, and the possibilities of somewhat modifying the treatment.

Of course it is true that there is a kidney tumor, and surgically the commonsense thing to do is to take it out. But I should want to know about the other kidney and what was the matter with this kidney, and on the basis of more facts make up my mind what to do. Just on the chances of course, the first diagnosis is hypernephroma.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Hypernephroma.

PRE-OPERATIVE DIAGNOSIS

Hypernephroma of the left kidney.

OPERATION

Gas and ether. 14 cm. incision through the left rectus musele. A retroperitoneal tumor of the left kidney about eight inches in diameter was exposed. The descending colon was freed and turned inward. The tumor was gradually shelled out. There was only moderate bleeding. The tumor was removed without rupture. No metastases were felt in the liver or the peritoneal cavity. The patient was in poor condition at the end of the operation, apparently because of shock rather than hemorrhage.

PATHOLOGICAL REPORT

A solid tumor measuring 9 x 12 x 17 cm. On section it showed a purplish-red finely lobulated surface with a large yellow opaque area in its center. The renal substance was compressed at one pole and a thickened band of fat rested on the pole opposite to the tumor. No adrenal substance could be identified. The pelvis was dilated. A large vein in the substance of the kidney was filled with purplish red thrombus. A large vein in the center of the tumor was also distended with thrombus.

Microscopic examination showed a lobulated growth composed of large clear cells and a fine vascular stroma. The lobules were separated by bands of connective tissue infiltrated with wandering cells. There were numerous areas of hemorrhage.

Carcinoma (Grawitz's type).

FURTHER DISCUSSION

DR. YOUNG: They thought it was hypernephroma. Of course the three diagnostic points are here,—pain, tumor, hematuria.

I think the interesting point here will be whether or not any metastasis, any other evidence of the disease is found at necropsy. She was transfused within two days. I think that the necropsy will not show hemorrhage or sepsis, but that we shall have to say she did die of operative shock. And as I say, the interesting thing is whether there are metastases that are demonstrable, because hypernephroma that reaches this size is as a rule not cured by operation.

DR. ROBBINS: Shouldn't you say that the bleeding was rather against the hypernephroma?

DR. YOUNG: That amount of bleeding? No, I think not. It is true that only about half of these cases do have hematuria. But I know that they do bleed, and bleed pretty severely at times.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Hypernephroma.
Operation, nephrectomy.
Shock.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Hypernephroma.
Operative shock.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Carcinoma (Grawitz's type) of the left kidney.)

2. *Secondary or terminal lesions*

Metastatic adenocarcinoma of the lungs.
Arteriosclerosis of the aorta with mural thrombus.
Slight chronic pericarditis.

3. *Historical landmarks*

Nephrectomy.
Slight chronic pleuritis, right.

DR. ALBERT E. STEELE: The pathological diagnosis was made from the specimen taken at operation. Necropsy showed numerous small metastases in each lung, about two cm. across. Most of them were beneath the pleura. They were more numerous in the lower lobes, and larger.

Microscopic examination of the lung showed a carcinomatous tissue varying considerably in histological character. The cells were numerous and sometimes showed a clear cytoplasm with prominent cell membranes. They were generally arranged in columns.

No metastases were found elsewhere; none in the liver, the spleen or the bone marrow. The right adrenal was negative. In the region of the left adrenal there were a few remains of adrenal-like tissue. I think that Dr. Richardson inserted that sentence because somebody might like to consult this record who was interested in the origin of hypernephroma; there has been considerable discussion whether hypernephroma comes from the adrenal tissue or from renal tissue.

The right kidney showed nothing abnormal. There were several bands of old pericardial ad-

hesions between the apex of the left ventricle and the parietal pericardium. There was some arteriosclerosis of the aorta and a small mural thrombus.

In other words, a case of hypernephroma with metastases in the lungs.

DR. YOUNG: I should have said that with the known tendency of the hypernephroma to metastasize to bones and to lung, X-ray of lungs and large bones before operation with a tumor of this size is definitely indicated, to see whether or not metastases are present. I wanted to ask whether the metastases in the lungs were of a size sufficient to show.

DR. CABOT: They would have shown I am sure.

DR. ROBBINS: Have you any feeling about the pericarditis as the cause of the murmur?

DR. CABOT: I am quite sure it is not.

DR. ROBBINS: Do you think that might be a mitral lesion although it is in the axilla?

DR. CABOT: I am skeptical about any diagnosis of mitral regurgitation. I have never seen any man who seemed to me to have the right to make it. Systolic murmurs in general in the heart I think are to be disregarded unless there is something else. That was the rule adopted in the British army during the late war, to send men to the front or anywhere else if a systolic murmur, no matter how loud, was all they could find. I do not think it points to any lesion whatever.

DR. ROBBINS: The age of the woman and the general conditions suggest as I said probably not mitral but arteriosclerotic if anything, but probably just a dilated heart.

CURRENT LITERATURE

ABSTRACTORS

GERARDO M. BALBONI — TRACY MALLORY
WILLIAM B. BREED — HERMAN A. OSGOOD
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GASTROINTESTINAL SYMPTOMS AND EPIGASTRIC HERNIA

WATSON, LEIGH F. (*New York Medical Journal and Record*, April 16, 1924).

Hernia in the linea alba has often been confused with gastric and duodenal ulcer, and sometimes the two conditions exist at the same time. The presence of a tumor or slitlike opening in the linea alba, with or without the protrusion of a small mass on coughing, will help to establish a diagnosis of hernia.

In ulcer the symptoms come on at a certain interval after eating, while in hernia the paroxysmal attacks have no relation to meals but usually follow physical exertion, and the patient finds the most relief is secured by assuming a doubled up position, which relaxes the linea alba—when the omentum slips back into the abdominal cavity the pain disappears. Epigastric hernia must also be distinguished from cholelithiasis, cholecystitis, gastralgia, gastritis, carcinoma, sarcoma, appendicitis, nephrolithiasis, abscess or tumor of the abdominal wall, and the gastric crises of tabes.

THE PRECIPITATION OF CRISIS IN THE TREATMENT OF PNEUMONIA

GARDNER-MERWIN, F. M. (*British Medical Journal*, July 12, 1924), concludes as follows:

1. That pneumonia is the result of lowered resistance.
2. That lowered resistance is coincident with, if not caused by, leucopenia.
3. That leucopenia is the result of a toxin which temporarily paralyzes the power of the system to respond to the chemiotactic call of bacterial invasion.
4. That sodium nucleinate, injected intramuscularly, has the power to overcome this disability and to call out the reserves of leucocytes stored in the marrow, converting the leucopenia into a leucocytosis, thereby precipitating the devolution of the disease.
5. That the effect of sodium nucleinate is independent of the duration of the illness, provided the patient is not in a dying condition before it is administered.
6. That the action of this remedy is greatly facilitated by intensive alkalinization of the system by administration of large doses of sodium bicarbonate.
7. That lobar pneumonia reacts more typically and satisfactorily than does bronchopneumonia.

[R. C.]

PHLORIDZIN GLYCOSURIA IN PREGNANCY DIAGNOSIS

HARNIK reports (*Wien. klin. Woch.*, June 26, 1924) his experience in Fleischmann's and Kermauner's clinics at Vienna with phloridzin glycosuria in the diagnosis of pregnancy. He believes it to be of practical value, but considers that most practitioners will prefer to wait the time necessary to make a diagnosis of early pregnancy by the usual methods.

[R. M. G.]

CELLULAR AND HUMORAL ALBUMIN STATUS

BERGER, from Steyrer's medical clinic at Innsbruck, discusses (*Wien. klin. Woch.*, August 7-14-21, 1924) the effect of diseases on the cellular and humoral albumin status of the body. This status he finds to be affected in disease by a displacement of the spectrum of the soluble albumin bodies toward the globulin side.

[R. M. G.]

THE FULL THICKNESS SKIN GRAFT

BLAIR, V. P. (*Annals of Surgery, September*, 1924).

This author presents an excellent article, well illustrated, on this subject and certainly proves that in his own hands the full thickness graft is of extreme value and generally successful.

[E. H. R.]

A BIPOLAR THEORY OF THE NATURE OF CANCER

CRILE, G. W. (*Annals of Surgery, September*, 1924).

Crile presents in his presidential address before the American Surgical Association, April, 1924, a rather unique theory of the origin of cancer. The article is of suggestive interest.

[E. H. R.]

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A TOO LITTLE UTILIZED FORM OF POST-GRADUATE INSTRUCTION

ONE of the methods used by medical schools to teach clinical medicine is to assign the student to a patient and give him the time and facilities to obtain the patient's history and make a physical examination of him. From this data the student is asked to deduct a diagnosis and outline a plan of treatment. The work of the student, particularly his physical examination, is checked by an instructor more skilled than the student in the methods of physical examination. The checking of the student's work is an essential factor in this method of instruction for without it the student would not know whether his method of examining the patient had yielded correct or incorrect results, and he might draw unjustified deductions as to diagnosis and plan an unsuited form of treatment. If the student is not checked in his work he could readily perpetuate for himself incorrect methods of physical examination or erroneous deductions from these results. Some such checking of results forms an integral part of much of the instruction in the medical school. Were it not so the faculty might be largely dispensed with.

After graduation a very large proportion of the students continue this check system of instruction by hospital work under the supervision of the hospital staff. Finally comes the day of the end of house-officer service and the beginning of practice. How now is the physician to continue to learn? How can the method of check be applied to his private practice? There are various ways but of these one only will be stressed here.

By applying the methods of his student days, history taking and physical examination, the physician in practice arrives at a diagnosis of his patient and outlines a treatment. The progressive changes in the patient under observation serve as checks. The results of treatment form another type of check. This constitutes what we call clinical experience and in proportion as the physician builds up clinical experience in so far he grows in his ability in medicine. However, in this process there is the danger of acquiring a fallacious clinical experience. To prevent this is the service of the check I have in mind. That is the check of post mortem examination.

Post mortem examination constitutes the supreme check on physical examination and diagnosis. The physician, who never sees an autopsy on a patient that he has been following, very soon forgets the possibilities of error in his methods of studying patients and loses a valuable incentive to more careful observation on the next patient. He tends to become too cocksure of his physical examination or possibly never finds out that signs he has schooled himself in believing certainly indicative of one thing really point to something else. No thoughtful physician, as an example, could have kept on diagnosing a systolic murmur at the heart apex in itself as indicative of a diseased heart had he followed even one such patient to his final death from, let us say, some acute infectious disease, made a post mortem examination and found a normal heart. Yet this is just what a large percentage of practitioners were doing until recently; hearing a systolic murmur and diagnosing valvular disease of the heart.

There is no better method of post-graduate study than to witness an autopsy on a well studied patient of your own. Even when you think the disease relatively well understood and the diagnosis certain many are the instructive surprises revealed by the autopsy. Every physician has the opportunity for such post-graduate study. The preceding generation of practitioners were far more keenly interested in the post mortem than ours; it was no uncommon thing for the general practitioner to do his own autopsies. The post mortem examination no longer is a common practice and the physicians, as a result, are losing a valuable opportunity to perfect themselves in medicine.

A medical wag explained the decline of the autopsy on the fact that so few people died now without having had an internal inspection during life at the hands of a surgeon. There is

some basis, we grant, for this explanation, but it is well to remember that even the most slashing surgeon makes but a limited inspection and misses much that a subsequent autopsy would reveal. Biopsy is a good check on diagnosis but one inferior to a thorough post mortem examination.

Recent advances in physiology and biochemistry have tended to decrease interest in pathological anatomy. Yet the student of such a disease as diabetes, in which the biochemical, metabolic interest looms large, talks glibly of causes of death and at the same time rarely checks his explanation of his patient's exitus by a post mortem examination, and so renders his statistics of causes of death in the diabetic but little more than skillful guesses. More frequent autopsies would teach much even about diabetes, a disease in which anatomical lesion does play a very minor part in contrast to cardiac disease or brain tumor or pneumonia, etc.

After all, pathological anatomy is the fundamental basis of the greater part of diagnosis and a knowledge of it is of the greatest help in the understanding of disease. The best way to learn pathological anatomy lies in the autopsy on the patient *you* have studied during life. Do not let present day fashions in medicine obscure this. If you wish to progress in your knowledge of medicine, secure and see autopsies on your patients. Better still perform the autopsy yourself. No form of post-graduate instruction could be superior to this which, alas, is a little utilized form of continuation study in medicine.

TEMPERANCE

In an age of prohibition one is interested to learn how some of the physicians of the olden time governed themselves in the matter of eating and drinking. A letter of Edward Augustus Holyoke, of Salem, the first president of the Massachusetts Medical Society, written to a friend in the South, in October, 1828, when he had passed his hundredth year by two months, will bear quoting in part. He says that he never injured his constitution by intemperance of any kind—what a record. More of us might reach the one hundred year mark by imitating him. "As to my diet," he goes on, "having been taught to eat of anything that was provided for me, and having always a good appetite, I am never anxious about my food," * * * * * * "As to quantity, I am no great eater, and I find my appetite sooner satisfied now than formerly;" * * * * * * * "After dinner I most commonly drink one glass of wine—plain boiled rice I am fond of—it makes nearly one half of my dinner perhaps as often as every other day —I rarely eat pickles or any high seasoned food—" * * * * * "As to drinks, I seldom take any but at meal times and with my pipe—in younger life my most common draft was cider, seldom wine, seldom or never beer or ale or distilled spirits—But for the last 40 or 50 years my most usual drink has been a mixture, a little singular indeed, but as for me it is still palateable and agreeable, I still prefer it—The mixture is this, viz. Good West India rum 2 spoonfuls, good cider whether new or old 3 spoonfuls, of water 9 or 10 spoonfuls—of this mixture (which I suppose to be about the strength of common cider) I drink about half a pint with my dinner and about the same quantity with my pipe after dinner and my pipe in the evening, never exceeding a pint the whole day; and I desire nothing else except one glass of wine immediately after dinner the whole day."

If it was a tablespoon with which the good doctor measured his rum he took three ounces of that liquid a day and in addition whatever alcoholic content there was in a glass of wine and some cider. Hard cider has had a reputation for containing a large percentage of alcohol. Dr. Holyoke would have had a bad time with the prohibition agents had he lived a hundred years later. Query. Would he have made a record as a centenarian had he been prohibited?

LEGAL PROCEEDINGS AGAINST A CANCER CURE CONCERN

The daily papers report that Justin Godart, French Minister of Labor and Health, has instituted legal proceedings against a medical institute which professes to cure cancer without surgery. If court action fails, an effort will be made to obtain legislation for the protection of victims in the future. The Minister of Health has been especially interested in the treatment of cancer and after the recent International Congress at Strassbourg, where it was especially emphasized that surgery and the X-ray are the only reliable means employed for the cure of cancer, he felt that he had no right to permit any other treatment of cancer patients.

We wish the Honorable Minister every success in his efforts. If the temper of the French courts and legislature is at all like that in this country we are fearful that little progress will be made through court or legislative procedure.

It is very probable that progress must be secured through publicity rather than coercion, for specious arguments directed against the position taken by the medical profession will continue to have weight until there is a higher average of intelligence among the people.

History will, in all probability, repeat itself for many generations, for the impossibility of solving many of the problems of disease will put effective weapons of attack into the hands of those who would block the general application of measures already approved by the profession.

Before courts and legislatures the quantity and not the quality of evidence seems to decide the issue. The efforts of the minister will be watched with interest.

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Boston Lying-In Hospital, Boston, Mass.

(Communications and questions directed to the Clerk will be welcomed and cheerfully answered.)

THE months of June and July, 1924, yielded 80 puerperal deaths in Massachusetts exclusive of Boston. These deaths are tabulated as follows:

	June	July
Abortion		1
Ectopic Gestation	1	1
Pernicious Vomiting	3	2
Puerperal Hemorrhage	7	2
Cesarian Section	4	2
Rupture of uterus		2
Childbirth		1
Shock following labor	1	
Puerperal Septicemia	6	11
Puerperal Embolism	7	6
Puerperal Albuminuria	9	13
Double breast abscess	1	
Totals	39	41

In addition four of further deaths were reported for May: one from a streptococcic infection of the breast, one from rupture of the uterus, one from chronic heart disease with acute decompensation during pregnancy, and one from albuminuria. These four bring the puerperal deaths for May outside of Boston to a total of 35.

Some of the June and July death returns warrant passing comment. One of the hemorrhage cases was evidently postpartum, four had placenta previa, three were due to premature separation of the placenta, while one such death occurred as a result of an inevitable abortion. Of the deaths classed to Cesarian section acute dilatation of the heart contributed to one; paralytic ileus to two; acute gastric dilatation, surgical shock, and chronic myocarditis each to one. One death was due to shock following difficult delivery of a hydrocephalic fetus. Two were caused by rupture of the uterus, of which one was reported as traumatic, the other due to dystocia. One cause of death was reported simply as "childbirth." One of the albuminuric deaths was returned as "Acute toxemia and abscess following abdominal Cesarian section." Two other deaths of this class were in patients delivered by Cesarian.

A recent issue of the Obstetric Column (Aug. 28th) has described in some detail the findings on abdominal palpation of a pregnant woman approaching term. The findings described are those obtained when the baby is presenting with its long axis parallel to that of its mother, e. g. by the vertex or by the breech. An appreciable variation from the normal is sometimes found in head presentations whenever the head in its descent into the pelvis becomes extended instead of flexed. Should this happen the brow or face of the baby becomes the presenting part, whereas flexion of the head would have caused the occiput to present. In the case of a brow or face presentation the fourth maneuvre will show that the fingers of the examiner sunk into the pelvis from above will be arrested at a higher level on the side corresponding to the fetal occiput or back than on the opposite side. This finding is the reverse of that obtaining when the head is, as far more frequently happens, well flexed.

A more striking variation from the usual finding is met when the baby lies transverse. Here the first and third maneuvres give no evidence of a fetal pole (vertex or breech) either in the fundus or in the lower uterine segment, but the second grip disclosed the rounded ballotable head in one flank and the more irregular and somewhat less definite breech in the flank opposite. Confusion may sometimes be caused by mistaking a uterine fibroid for one of the fetal poles, but the constant presence and relative immobility of the fibroid will ordinarily serve to make the distinction.

Multiple pregnancy is always a possibility in any given case, and is the more likely if the patient has had one or more previous multiple pregnancies or if the tendency has been inherited from a foregoing generation of her family. Definite diagnosis is often difficult, but antepartum examination will usually give the physician a suspicion, at least, of the presence of more than one fetus. At first glance the abdomen is of larger size than would ordinarily be expected, in itself a suggestive sign. By palpation an unexpectedly large number of fetal small parts felt through the abdominal wall are similarly suggestive. Multiple fetal poles are still more suggestive, and if two heads and two breeches can be definitely made out the diagnosis of twins is made. Occasionally, however, the presence of one or more uterine fibroids may lead to confusion, in that such growths may simulate fetal poles or small parts. Finally the auscultation of two fetal hearts at considerable distance from each other confirms the diagnosis, provided that these are not synchronous in rate; a difference of at least ten beats per minute should be demonstrated after the sounds have been listned to separately for at least a minute each.

The foregoing, of course, applies principally to the diagnosis of a twin pregnancy. Triplet and quadruplet pregnancies are well-nigh impossible to demonstrate as such in this way, and are rarely definitely discovered until the deliv-

ery of one or more babies reveals the presence of still more in utero.

Whether or not multiple pregnancy is diagnosed or suspected auscultation of the fetal heart should be included in the antepartum examination. During the last weeks of pregnancy the fetal heart is usually heard and can be counted in one of the lower abdominal quadrants of the mother. As a general rule it is best heard on a line between the umbilicus and the anterior superior spine of the ilium when the occiput points anteriorly, on the right in right positions, and on the left in left positions; if the occiput is posterior it is usually best obtained well out to the flank on the corresponding side, though not infrequently it is transmitted through the baby's chest wall to the opposite occiput anterior region. For this reason diagnosis of position from the location of the fetal heart alone is untrustworthy, as the right occiput posterior often shows the fetal heart tones in the region where they would be equally well heard were the position a left occiput anterior. If the baby presents by the breech the tones are ordinarily heard at the level of the umbilicus or even higher, and to the right or left of the median line, corresponding in general to the position of the baby's back.

The fetal heart is best heard by means of a head stethoscope, which consists of a bell held against the observer's forehead by means of a head-band and connected to ordinary ear pieces. This type of stethoscope, (Hillis-DeLee,) renders the heart tones most clear and definite, and may be worn by the physician during operative delivery as a most effective means of observing closely the condition of the baby. However the Bowles or even the ordinary bell stethoscope is satisfactory in most cases. If the Bowles model is used it is best to remove the diaphragm and cover the bell with a loosely fitting rubber jacket. The bell should be allowed to lie with its own weight on the abdominal wall, for if held by the fingers adventitious noises almost always obscure or obliterate the heart tones. If it tends to slip it may be steadied either by moistening with a little water or by means of a tightly stretched rubber band held across its reverse side.

The normal fetal heart rate lies between 120 and 160 beats per minute.

MISCELLANY

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING OCTOBER 25, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Anterior poliomyelitis	8	Dysentery	1
Chickenpox	87	Encephalitis lethargica	1
Diphtheria	150	Epidemic cerebrospinal meningitis	2
Dog-bite requiring anti-rabic treatment	3	German measles	5
Gonorrhea	98	Syphilis	55
Influenza	7	Tetanus	1
Measles	47	Suppurative conjunctivitis	8
Mumps	33	Tuberculosis, pulmonary	93
Ophthalmia neonatorum	8	Tuberculosis, other forms	31
Pellagra	1	Typhoid fever	11
Pneumonia, lobar	63	Whooping cough	76
Scarlet fever	191		
Septic sore throat	2		

RHODE ISLAND STATE BOARD OF HEALTH

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING OCTOBER 11, 1924

Diphtheria		*Typhoid Fever*	
Cumberland	1	Providence	2
Pawtucket	1		
Providence	3	*Cerebrospinal Meningitis*	
North Providence	1	Pawtucket	1
Warwick	1		
Scarlet Fever		*Mumps*	
Pawtucket	1	Charlestown	1
Providence	2		
Warwick	1	*Chickenpox*	
West Warwick	1	Providence	2

THE ATTLEBORO HEALTH CAMP

THIS camp maintained by the Health Department and Attleboro Tuberculosis Society opened July 7th, and closed Aug. 18, 1924. Its efforts in caring for undernourished children, resident in the city, were of considerable local interest, and excited much favorable comment. The results obtained compare favorably with those of camps engaged in similar work, although its policy differed from that of the usual health camps.

The location of the camp on North Main St., above Commonwealth Ave., was ideal in many ways, as it was convenient to the city, at the same time having the advantages of a country atmosphere. There were many acres of woodland to which the boys had free access, and an open field adoining where sports were indulged in.

The purpose of the camp was the carrying out of a very important and definite plan which was carefully worked out to build up the resistance, during the summer months, of undernourished children, who were found to be in need of such attention.

This work was first begun by the Health Department in 1923, when a day camp for ten boys served to demonstrate, by the successful results obtained, the importance and necessity of continuing the project on a much larger scale.

The Health Department was aided in its plans this year by the newly formed Attleboro Tuberculosis Society which has an active membership of citizens especially interested in such work. This society has, by its organized effort, obtained results which show the necessity and usefulness of such an ally in carrying out certain public health measures. The success of the camp was made possible in a financial way this year, by the Attleboro Lions' Club which built

and equipped a large dormitory, dining room and kitchen and furnished a large part of the funds necessary for maintenance.

The Attleboro Health Camp differed in some respects in its policy from that of similar camps scattered throughout the state. It differed materially in the respect that all applicants for admission to the camp who had been examined and found to have remedial physical defects, were obliged to have such defects corrected before entering camp. Previous preparation, therefore, had to be gone through with, in each case, when necessary, so that when camp opened, every child admited was free to gain. Teeth defects in applicants were also corrected in so far as possible and the teeth were examined and looked after during the camp period.

Attleboro Health Camp.

It is believed that one of the most important things next to the building up of the resistance of the child while in camp, and fully as important as an increase in weight, is the teaching of health habits to all of the children. Care of the teeth, regulation of the diet, regulation of exercise and insistence on rest periods, as well as the serving and consuming of meals properly, regular daily routine, interspersed with sports and games,—all serve as factors in building up a happy, healthy child who will return to school much improved in his physical condition generally, and able to resist certain diseases to which he may be exposed at any time.

This year 30 boys were admitted to the camp on July 7th, for a period of six weeks. These boys were not allowed to return to their homes while attending the camp. This policy also differed from that of other camps but it was thought to be absolutely necessary to obtain the best results possible. The boys were, however, allowed to leave the camp on Sundays for religious observance.

Daily routine began with reveille which was sounded on the bugle at 7:15 in the morning. The boys then had setting up exercises in true military fashion under the guidance of the camp supervisor after which a shower bath was taken and teeth were brushed. Then they were ready for breakfast which was served at 8:00. Breakfast consisted usually of fruit, cereals, with eggs, bacon, or fish with muffins and milk. Dinners were composed of more hearty foods such as pot roast, vegetables, whole wheat bread, rice pudding, and milk, which, after being carefully selected and prepared by an efficient cook, was served at 12:30. By the generosity of several citizens interested in the boys, it was possible to serve ice cream six times a week at one of the meals during the day. Suppers were rather light, composed of easily digested food such as vegetable salad, jelly sandwiches, spice drops, and milk or cocoa. In addition to these three meals, the children also had a mid-morning and mid-afternoon lunch consisting of milk and crackers which did not seem to interfere with their appetites for regular meals. All meals were served in a cool dining room open on all sides and screened. The food was carefully selected for growing children between the ages of 8 and 14.

A particular policy insisted upon by the management of this camp was the provision of a pure milk supply for the children. It is a well known fact that from 5 to 15% of the cases of tuberculosis in children are caused by tubercle bacilli which the child gets through drinking milk. With this idea in mind, it is especially essential that these undernourished children shall not receive any milk which has the least suspicion of containing tubercle bacilli. Therefore, the milk used, for the greater part, came from tuberculin tested cows in an accredited herd of jersey cattle. This milk was carefully examined once a week by the Milk Inspector connected with the Health Department. The number of bacteria per c.c. that it contained was estimated and the per cent of butter fat and other solids were determined and reported to the camp management. It was impossible, when needed, even at the high price that the management was willing to pay for this kind of milk, to obtain it in sufficient quantity for the children's needs. An additional supply was obtained which the managers knew had been carefully pasteurized. The great advantage of this milk over ordinary milk for underweight children cannot be over estimated. It not only contained a very high fat percentage and a high percentage of total solids, but it is also clean and free from injurious bacteria. Above all, it is absolutely fresh when received, and uniformly palatable.

Another important aid in increasing the weight of the children was found to be the necessity of rest periods before dinner, and supper, as well as a short time after dinner in the afternoon. The afternoon rest period was the most important. At this time the children reclined on their beds with shoes removed for one and a half hours, after which they were free to play until the rest period was due again at supper time.

The problem of all this camp routine, which was carefully carried out and considered very

important from a child health standpoint, included the idea of making the children contented and happy by providing plenty of sports and recreation. The boys made several trips to a fresh water lake nearby, in a truck with the supervisor, where they went in swimming. Baseball was one of the popular sports and the organization of different teams greatly added to the interest of the boys. The supervisor introduced the game of cricket, which the boys enjoyed greatly. Pitching quoits, swinging and various other outdoor sports were provided for the contentment and happiness of the thirty boys. Under the guidance of the supervisor, the boys were very busy building a leanto in the woods behind the camp for several days. There they spent many hours during the extremely hot spells of this summer.

The boys were weighed every Monday, and the weight carefully recorded on charts which were kept posted in the dining room of the camp. A glance at these charts showed the wonderful results that were obtained by the steady gain in weight of practically all of the children. An aggregate gain of 215¼ pounds was made during the six weeks that the camp was in session, with an individual gain of 7½ pounds.

A complete physical examination of each boy was made before the camp opened, and recorded on a special blank. An individual photograph of each boy stripped to the waist was made on admission and a similar photograph was taken at discharge. These pictures mounted side by side for comparison furnish a true and permanent record of great value.

After the camp closed a letter was sent the parents of each boy, containing brief instructions, and enclosing a specimen diet list.

Follow up work is planned for the winter, and has already begun, the boys reporting in small groups at intervals for examination at the Health Department Dispensary.

MEMBERSHIP DRIVE

THE AMERICAN NATIONAL RED CROSS, chartered by Congress to relieve and prevent suffering, in peace and in war, at home and abroad, holds its eighth annual ROLL CALL from Armistice Day through Thanksgiving Day—November 11th to 27th—to enroll members for 1925. Men and women are invited to join the local Chapters and Branches in this nation-wide calling of the roll.

When you subscribe your dollar every year to the American Red Cross you naturally want to know how it will be spent.

If you renew your membership or add your name to the roster during the Eighth Annual Roll Call from Armistice Day to Thanksgiving your dollar will help these activities along:

The disabled world war veterans—Since the Armistice the Red Cross has spent $50,000,000 for services to men of the Army and Navy and veterans of the war. It is now assisting more than 100,000 disabled ex-service men and their families each month. To 180,000 soldiers, sailors and marines on active duty it is giving the same help it gave during the war.

The Nursing Service—The Red Cross has 41,000 nurses enrolled for emergency—war, disaster, epidemic.

Disaster Relief—During the past 43 years the Red Cross has spent $33,000,000 for Disaster Relief; it has directed or participated in relief work in 220 disasters the past year.

Public Health Service—Nine hundred and seventy-four Red Cross public health nurses during the year have aided in the care of the sick, guarded the health of children and fostered understanding of personal and community hygiene.

Home Hygiene and Care of the Sick—Sixty-five thousand women and girls have taken courses in Home Hygiene and Care of the Sick; 135,000 children and 10,000 women have been taught the use of proper foods.

First Aid and Life-Saving—The Red Cross has trained more than 49,000 men, women and youths to rescue and revive the drowning; 14,500 completed the course in First Aid during the year and 137,000 were reached with demonstrations by the Red Cross First Aid Car.

In the Junior Red Cross 5,452,745 enrolled

school children are learning the value of service. With the children of 40 other countries they are creating bonds of mutual friendship and understanding.

HARVARD MEDICAL SCHOOL

CLASS OFFICERS 1924-1925

First Year Class: President, Myles P. Baker; Vice-President, William C. Baty, Jr.; Secretary, John P. Monks; Students' Association, Paul H. Wilson.

Second Year Class: President, R. S. Flinn; Vice-President, R. H. Wallace; Secretary-Treasurer, C. H. McMillan; Students' Association, C. L. Parsons.

Third Year Class: President, W. M. Long; Vice-President, George Booth; Secretary, C. W. Heath; Students' Association, F. S. Bruckman.

Fourth Year Class: President, G. M. Saunders; Vice-President, R. B. Cattell; Secretary-Treasurer, J. R. Campbell, Jr.; Students' Association, R. J. Kirkwood.

ASSOCIATION OF Y. M. C. A. PHYSICAL DIRECTORS' MEETING

THE fall session of the Association of Y. M. C. A. Physical Directors assembled in Boston on Thursday, Oct. 16th. Sixty members were present representing Massachusetts and Rhode Island.

Most of the day was spent in attendance at demonstrations at the homeopathic hospital. Dr. Nathan Garrick gave a demonstration of the physical examinations as he conducts them in the Boston Y. M. C. A. Heales gave findings from two hundred cases with percentages of various malformations, organic troubles, etc., discovered, thus showing the value of such an examination. Dr. Howard took the members to the orthopedic department and showed types of cases treated there. Further demonstrations were conducted in the departments of Physiotherapy and Hydro-therapy and in the anatomical department of Boston University Medical School.

DR. EINTHOVEN'S INTERPRETATION OF THE ELECTRICAL PHENOMENA OF MUSCULAR CONTRACTION

Two lectures, under the Edward K. Dunham Lectureship, were given by Dr. William Einthoven at the Harvard Medical School on Oct. 21st and 22nd. Dr. Einthoven interpreted the results of a series of experiments performed to show the relation of the mechanical and electrical phenomena of muscular contraction.

The prevailing theory on this subject has been that the change in electrical potential of the muscle, as recorded on a galvanometer, immediately precedes the wave of contraction. Dr. Einthoven's experiments showed an exact parallelism between the muscular contraction and the electrical disturbances connected with it. Most of the observations were made on the heart, but very similar results were obtained with skeletal muscle. The conclusion was drawn that these phenomena occur simultaneously and that they are equal in intensity and duration

He attributes previous errors mainly to a lack of sensitiveness in the mechanical registering apparatus, as compared with the delicate electrical apparatus used. When the former is made as sensitive as the latter, by the removal of sources of friction, a divergence of the galvanometer never occurs without a simultaneous movement of the lever registering a contraction. One is the counterpart of the other.

This new interpretation of the electrical phenomenon in muscle may be of some practical importance in that it shows the clinician to be on sure footing when he interprets the condition of the heart by the electrocardiogram. The same is true in judging the extent of nerve regeneration by the action current of the muscle. Theoretically this may also provide for more accurate work in heat production and metabolism in muscle.

KILL THE LATE FLY

THE active fly season is over for this year. How active it has been depended entirely upon the work done in each community to rid itself of flies by destroying or eliminating all breeding places, and protecting food supplies and privies from flies.

The cold days of early fall are first aid assistants in closing the fly season but many flies more hardy than the rest run to cover to the warmer places. Here they are found in houses and warm buildings—not over-active to be sure, but annoying in their persistence. Some of the house defenses such as screens have already been removed and the fall house cleaning has made entrance easy for them.

These flies are more than an annoyance. As the colder weather advances they will find out of the way places in cellars and attics in which to spend the winter. It is this October generation of flies which is harbored over the winter season, ready to start new generations of flies when warm weather starts next year.

Do not allow one fly to live over the winter season. *Kill the late fly.* This will form the first defense against flies for next season.

MEDICAL ADVICE BY RADIO

FOR some years, the Public Health Service has maintained a free, medical service to ships at sea having no physicians on board, and many stories of its usefulness in emergencies have been recounted.

This Service, which has been established on the Atlantic and Pacific coasts and on the Gulf of

Mexico, is being extended to include shipping on the Great Lakes. Arrangements have been made for Marine Hospital No. 6 at Cleveland, Ohio, and Public Health Service Relief Station No. 327 at Sault Ste. Marie to respond to requests from masters of lake vessels for medical advice when needed.

IODINE AND GOITRE

In his annual report Dr. Barwise, the Derbyshire County Medical Officer, says that in his district one person in ten is affected with goitre. In Switzerland and America school children have been treated successfully with iodine and the health authorities in New Zealand are distributing iodine tablets in the schools. They are also considering the addition of iodine to table salt and to the water supply. In Austria the goitre problem is acute, inasmuch as seventeen per cent. of the children from five to nine years of age, and twenty-nine per cent. of those between thirteen and eighteen are affected with goitre. In this latter country iodized table salt, the use of which has been continuously advocated by Professor Juarreg since 1898, is now used in all State institutions; and in a pamphlet issued and widely distributed by the Government it is recommended for general consumption. Already good results have been manifested.—*The Medical Press.*

The Massachusetts Medical Society

REPORT OF THE COMMITTEE ON HEALTH EXAMINATIONS

The committee appointed by the President of the Massachusetts Medical Society to consider and report upon Health Examinations submits the following report:

The committee believes that it is unnecessary to argue before medical men the value of the periodic health examinations. However considerable publicity is necessary in order that the public may appreciate the value of periodic health examinations and understand the necessary limitations of a health examination. Furthermore the public must be educated to regard health examinations as a different procedure in many respects, especially in regard to the physician's charges, from ordinary office visits.

The committee has had before it a large amount of data bearing upon physical examinations, including the various forms already in use, such as those employed by life insurance companies, industrial organizations, school and college authorities, public and pay clinics, certain practitioners, etc. The committee finds however that these excellent standard procedures which have been evolved to meet specialized conditions in particular groups, do not lend themselves to ready utilization by the average practitioner in general practice, and therefore do not meet the needs of the medical profession in general or of the general public.

It must be obvious that any proposed plan should be general in scope, should permit of considerable elasticity, and should be expressed in terms of minimum requirements. The committee does not desire to set up an exact standard which will in any way hamper the excellent work now being done by specialized groups or by individuals. Many physicians make a strong and desirable appeal to the general public and to the profession by a very complete standard of physical examination which includes examinations by specialists and by sundry laboratory procedures. Such examinations demand facilities which the average practitioner does not possess. There is reason to believe that there are ample opportunities for both rich and poor for the most elaborate details of physical examination, provided there are indications. It is believed that the inclusion of elaborate details in any general plan for physical examination would at once spell failure. It is to be understood that, provided there are indications, the proposed plan of the committee will be extended to meet those indications, but in general the committee believes that unless the profession at large can and does carry out health examinations the real object of health examinations can not be obtained.

While it is true that in some of the more elaborate plans for conducting physical examinations several specialists participate in each physical examination, the committee feels strongly that as a general policy it is much sounder if the examined individual is regarded as an entity by one physician rather than as a collection of segments with each of these segments a province of a different physician. While there is a strong tendency on the part of the general public to consult a dentist, an oculist, or a nose and throat specialist quite independently of the physician who looks after their general health, nevertheless it is constantly becoming more evident that apparently local disturbances in the teeth, eyes, and throat have general constitutional significance. The committee would like to see the general practitioner in rather more complete charge of his patients both in illness and in health, not because it might seem to be of benefit to the physician but because the committee believes that it would be of great benefit to the patient.

The committee believes that the medical profession by adopting the principle of health examinations also undertakes a considerable responsibilty. The committee believes that the medical profession is and must be the very foundation stone of public health, and is inclined to look askance at certain tendencies to separate widely the functions of curative medicine and preventive medicine. There will of course al-

ways be specialists and leaders, but the general practitioner should practice preventive medicine as he practices curative medicine. It is of course true that the general practitioner in practicing preventive medicine must readjust his view point just as he does in practicing within the types of curative medicine. It will be necessary for the general practitioner carrying out health examinations to collect his data and to interpret his data with a somewhat different view point from that with which he approaches a case of illness. It is also true that the healthy person seeking health examination approaches the physician with a very different view point than that of a sick person seeking relief from certain ailments. It will be necessary for the profession to think more than is their custom in terms of normal standards and of early symptoms and signs, and to adopt other procedures of investigation, interpretation, and subsequent advice and treatment than perhaps has been their habit. For example, the physician conducting physical examinations among the apparently healthy must be cognizant with the variations in blood pressure; he should, without perhaps undue worship of fixed height and weight ratios, be familiar with the normal range of weight for given heights at given ages; he should be prepared to give advice as to actual food requirements in the individual case; he should have definite information concerning common cardiac irregularities and their significance; he should have sufficient knowledge of common skin conditions, for example, acne; the common orthopedic conditions, for example, pronated feet; and similarly of the other specialties so that at least these conditions be recognized even if a given physician does not elect to treat them.

In health examinations it is perhaps peculiarly important for the physician to exercise caution in making hasty deductions from physical findings. The finding of sugar in a single specimen of urine may not mean diabetes. In an apparently healthy individual, it is often wise to check up pathological findings, especially blood pressure, urine and Wassermann reactions.

The committee does not want to fix arbitrarily any standard of procedure for the profession. However it feels that it is wise to make certain concrete suggestions which should be interpreted as suggestions and illustrations. It is obvious that any form of physical examination means a considerable expenditure of time on the part of the physician. For the good of the movement for physical examinations and for the security of the physician these physical examinations should be carried out with some deliberation. The committee believes that the physician should be prepared to devote an hour to each first physical examination. In actual operation, in private practice, it not infrequently happens that one hour is not sufficient to permit of a complete discussion of the findings on the physical examination. For such cases additional appointments must be made, presumably at some future date. The charges for physical examinations should of course be made on a somewhat different basis than is ordinarily the custom of physicians in their usual office charges. Naturally these charges vary. The committee merely desires to point out for the protection of the physician that it is desirable to have a full understanding of the financial aspects and the basis on which charges are to be made, whether it is by time or by the examination. Experience indicates that the public accepts very readily such modifications of the physician's charges provided they are accompanied by an explanation.

The committee is in some doubts about the desirability of suggesting standard forms. Of course the physical examination in order to be of real value must be recorded in some permanent form. The committee is fully cognizant of the difficulties of the practitioner with his records. It is obviously desirable if a practicing physician has built up some satisfactory method of keeping his records that the physical examination record should be incorporated into his present system. It is always annoying to have material for filing which does not conform to the existing system. It must be remembered that, after all, forms and records are only devices, that they are only of value for the material that they contain, and are only a means to an end. The committee has been over, and with much care, many forms. The committee is inclined to be very sceptical as to the value of some of these elaborate forms, because it seems likely that real important data might well be lost in the maze of unimportant details. Then too these formidable forms are designed to meet an entirely different situation than that with which the committee is concerned. In the case of many elaborate forms the person collects the data in relatively an impersonal way, and the data goes through various hands for interpretation. In the problem before us the collection of the data and the interpretation will be immediate and personal. Consequently the committee recommends a much more skeletonized and general type of form than that ordinarily advocated.

The committee at one time attempted to include in this report so called normal standards, such as height and weight tables, normal variations of blood pressure, etc., and also standard procedures such as the method of taking the blood pressure, methods of urine analysis, etc., and also certain possible helpful information particularly in regard to diets. After much consideration these features were omitted. It was thought wiser to make the report as simple as possible, and not to extend the activities of the committee into the realm of the production of a handbook. It is the opinion of the com-

mittee that after some experience a good many changes will be found desirable and possibly at that time some sort of a handbook may be useful to the members of the Society. The committee is inclined to the belief that the most desirable form for recording the physical examination is upon a standard card with a fly leaf duplicate with carbon paper between. The physician will then make one record. He will have a card for his own files, and can, if he chooses, give a copy to the patient. The committee recommends the publication of such forms by the Society, and the sale of these, at cost, to the members of the Society.

For the purpose of clarification the committee presents a brief comment on the appended form. The committee recommends a general heading of Family History, under which the salient facts as to father, mother, brothers, sisters, husband, wife and children and their ages and deaths and causes of death should be recorded, but without elaboration except under special circumstances. Likewise under Previous History the committee believes that for general purposes Illnesses, Accidents, and Operations are adequate headings. The committee believes that it would be desirable to have a general heading for Occupational History, for Social History, and for Habits. Under Habits would be included not only tea, coffee, tobacco and alcohol, but sleep, exercise, diet, and bowels. For women a special heading for Catamenia should be added. The next heading should be the Present Status or in ordinary terminology of medical case history, present illness. Here it seems to the committee is of paramount importance that as in cases of illness there should be featured the presenting symptom of the chief complaint rather than allowing that to be overshadowed by a multitude of details. It is the experience of very highly organized clinics with standard forms that occasionally the patient although asked all of the questions on the elaborate form is never asked the question which to him seems the most vital, namely, "What do you actually complain of?" or "Why did you come to see the doctor?" It seems to the committee to be essential that if the patient feels perfectly well and comes merely for general overhauling that such a simple statement should be baldly recorded. Of course under the heading of Present Status a survey of the various physiological systems to ascertain disturbances and possibly important symptoms should be included. Obviously tendencies to colds, the maximum weight with date should also be recorded.

The committee finds perhaps most perplexing any standardization of the physical examination. The committee presents with some hesitation only simple headings, as will be seen on the form. After considerable discussion the committee voted to put the Wassermann reaction upon the form not that the committee thought that necessarily the Wassermann reaction ought to be done in every case, but rather that the Wassermann reaction should be performed as a part of a routine physical examination much more often than is done at present. The State Board of Health and some local Boards of Health perform the Wassermann reaction without charge and furnish the necessary containers. The only equipment needed by the physician is a small syringe and needles.

The minimum equipment needed by the physician for the conduct of these health examinations consists of scale with measuring rod, a Snellen's eye chart, tongue depressors, stethoscope, blood pressure apparatus, Tallquist scale, with a needle, nitric acid, with a wine glass, Benedict's solution (or Fehling's Solution). Many physicians will want in addition glass slides and cover slips, a blood stain such as Wright's blood stain, blood counters, blood counting solutions, a microscope and centrifuge. Again it is urged that in the presence of positive indications more elaborate procedures will be required. The simple basic physical examination should be regarded as the foundation stone upon which, when necessary, many more elaborate procedures can be placed. For example the presence of cough with sputum even with negative chest findings is obviously an indication for the examination of the sputum and perhaps for an Xray of the chest.

However experience has shown that if these health examinations are actually examinations in health and are for the purpose of detecting early disease, the large proportion of individuals coming for physical examination should be found organically sound. Finally the committee would like to stress again the importance of hygienic advice or advice concerning the general rules of hygiene. Nearly all individuals, most of whom of course will be organically sound, will have a varying number of hygienic errors.

SUMMARY

The committee presents a plan for physical examination. The committee recommends the printing of the form for the Society for sale at cost to members. The committee recommends that the Society and District Societies energetically foster the movement for health examinations by meetings, committees and publicity.

The features of an adequate health examination that seem to the committee especially important are:

1. A permanent record.
2. Ample time for the examination.
3. A careful history of the individual case.
4. Examination of the patient without clothing.
5. A thorough review of the findings of the history and physical examination.
6. Careful and explicit advice to each in-

dividual patient, with adequate appreciation that organic soundness is often associated with marked functional disturbances.

7. Utilization of the interview after the physical examination for the instruction in the simple rules of hygiene.

8. Encouragement to the patient to report periodically for reëxamination, ordinarily at the end of a year, and always at the onset of striking symptoms, particularly losses or gains of weight, persistent cough, etc.

9. Adequate remuneration for services.

A sample chart presented herewith is recommended:

Name ..... Date ..... Occupation .....
Family History .....
Social History .....
Previous History .....
Illnesses ..... Habits .....
Accidents ..... (Women) Cta. .....
Operations ..... Special symptoms .....
Present Status .....

PHYSICAL EXAMINATION

Age: Yrs. ..... Mos. ..... With Height: Without shoes ..... With Weight: Without clothes .....
Color ..... General Appearance .....
Scars ..... Hair ..... Skin .....
Posture ..... Feet ..... Shoes .....
Eyes: R ..... L ..... Glasses: R ..... L ..... Oculist .....
Tongue ..... Teeth ..... Gums ..... Dentist .....
Ears ..... Hearing .....
Heart .....
Pulse rate ..... B. P. .....
Lungs .....
Abdomen ..... Hernia ..... Genitalia ..... Hemorrhoids .....
Varicose veins ..... Glands .....
Urine Examination .....
Hgb ..... Wassermann reaction .....
Summary .....
Advice .....

ROGER I. LEE, *Chairman.*

HARVARD STUDENTS ADDRESSED BY DR. WANLESS

DR. WM. J. WANLESS, M. D., F. A. C. S., Prof. of Surgery, Miraj Medical School and Surgeon-in-chief of Miraj Hospital, addressed a gathering of Harvard Medical students on Monday, Oct. 27th. The meeting was held under the auspices of the medical committee of the Phillips Brooks House Association.

Dr. Wanless discussed the development of surgery in India and the general types of cases requiring surgical treatment. Bladder stones are common in the arid districts. The operation for this condition consists of a perineal incision through which the stone is crushed, rather than the supra-pubic lithotomy practised in America. Genito-urinary and venereal diseases are common, but the latter are not so virulent as in this country. Blood parasites are quite prevalent. Tumors of the scrotum and hydrovele occur frequently.

Cataract is very common, especially throughout Punjab. The extra capsular operation is done now in ninety per cent of the cases in India and gives far better results than the old one of capsulotomy.

There is a big field in India for abdominal surgery. Gastric and duodenal ulcers occur quite frequently. In most cases excision is unnecessary, gastroenterostomy relieving ninety per cent of the cases.

MASSACHUSETTS MORTALITY STATISTICS: 1923

THE Department of Commerce announces that the 1923 death rate for Massachusetts was 1,295 per 100,000 population as compared with 1,283 in 1922. This increase in 1923 is largely accounted for by increases in the death rates from diseases of the heart (from 223 to 241 per 100,000 population), whooping cough (from 8 to 12 per 100,000 population), measles (from 6 to 9), and influenza (from 17 to 31).

MEETING OF THE HARVARD MEDICAL SOCIETY

THE Harvard Medical Society met on Tuesday evening, Oct. 28th, at Harvard Medical School. Dr. N. D. Royle and Prof. John I. Hunter of Sydney, Australia, addressed the meeting on "The Problem of Treatment in Spastic Paralysis."

Dr. Royle explained the importance of a knowledge of the double nerve supply to mus-

cles, in connection with this type of paralysis. In annual experiments he discovered that section of the sympathetic nerves leading to the leg produced a marked change in muscular reaction and tone. There was less resistance of the limb to passive movement. In the decerebrate animal the lengthening and shortening reaction, as described by Sherrington, disappeared from the limb. In other words there was a removal of plastic tonus, as a result of the section of the sympathetic nerves to the limb.

A similar operation on a patient having spastic paralysis as a result of gun-shot wound in the head, was followed by a number of important improvements in the control of the affected limb. Plastic tonus disappeared; contractile tonus was retained and there was a gradual improvement in muscular control and maintenance of balance. The muscles gradually improved. The extent of the improvement was proportional to the time which had elapsed after the operation. Such an operation is indicated only in the presence of plastic tone. In patients without adequate cortical control and in those having spinal or cerebral obstruction an operation would be of little benefit.

Dr. Hunter presented histological evidence of the sympathetic innervation of sheletol muscle. The grape-like nerve endings in muscles have been found to be supplied by non-medullated fibres and the plate-like terminations by the medullated fibres. Division of the sympathetic cord caused degeneration of the non-medullated fibres and section of the spinal nerve to a particular region caused degeneration of the medullated nerve fibres there.

Experiments on fowls in this connection were illustrated by films. In these Dr. Hunter was able to demonstrate the function of the sympathetic innervation of the wing muscles. With the brachial plexus cut and the sympathetic cord intact, the wing showed no movement but tended to remain fixed when placed in a new position, even showing considerable resistance to gravity. Upon subsequent section of the sympathetic the wing became perfectly flaccid.

From these experiments it becomes evident that postural tone is made up of two components, namely contractile and plastic tonus. The former imposes a new posture through the mechanism of the reflex arc of the spinal nerves. The latter fixes the length of the muscle fibres, necessary to maintain the new posture by means of the sympathetic innervation of the muscles. There is some histological evidence that these two sets of control act on different muscle fibers. Further research is being conducted on this subject.

Plastic tone is displayed only when the Central Nervous System is intact as high as the pontine level. Lesions above this level give increased plastic tone and it is in such cases that an operation involving sympathetic ramisection is beneficial.

CAN LEPROSY BE CURED?

FEW people in this country other than physicians ever see a case of leprosy although it is estimated that between five hundred and one thousand lepers are still at large in the United States. Except the disease be in its last stages the average person would never recognize it. Lepers have been known to live in communities for years before being recognized as such. Often these persons are discovered to be lepers when applying for treatment of some other condition.

Recently three lepers have been discharged from the National Leprosarium at Carville, Louisiana, as having now no manifestations of the disease. To all intents and purposes, they have been cured although the doctors merely certify that the disease has been arrested and that these persons are no longer a menace to the public health.

The treatment at Carville, while by no means wholly confined to the use of special preparations of chaulmoogra oil, depends very materially on these preparations for its efficacy, or in other words, their use is regarded as an important adjunct of the treatment.

The accommodations for lepers at Carville have never been sufficient to take care of all the lepers who apply. At present there are 211 beds, all of which are filled, but there will soon be facilities to care for a total of 415 lepers and it is believed that the new buildings will be rapidly filled as there is a large waiting list.

The timely provision for the isolation and treatment of these unfortunate victims of this terrible disease will, no doubt, diminish the spread of leprosy in the United States, a matter that is already giving great concern to both National and State health officers.—*United States Public Health Service.*

THE MEETING OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

The quarterly meeting was held at 3 Joy street, Boston, October 29, 1924, the president, Dr. G. L. Tobey, in the chair.

The association has become a member of the National Health Association and has appointed Mr. W. G. Kirschbaum, Executive Officer of the New Bedford Board of Health, a delegate to represent the Massachusetts Association.

Dr. Edwin H. Place addressed the meeting on the subject of "Recent Additions to Our Knowledge of Scarlet Fever." He explained the features of the diagnostic tests and the prophylactic and convalescent measures now employed. This was followed by an animated discussion which led to explanatory remarks by Dr. Place

in closing. It was explained that there are many difficulties to be met in the general application of present day knowledge, for prophylactic and convalescent sera are not generally available at the present time, although Dr. White and Commissioner Kelley gave some assurance of a toxin to be given to competent technicians provided that reports will be submitted of the work done.

Since no one standardized toxin has been generally approved, it is too early to recommend the general use by practitioners of the anti-scarlet fever toxins.

Dr. Howard Lampher, Epidemiologist of the Connecticut State Department of Health, gave a full account of the smallpox epidemic at New Britain, which began in January 1924 and was not entirely abolished until the following June because of the introduction of the disease by at least two separate cases at different times. It was interesting to note that the testimony substantiated the generally acknowledged facts that vaccination does control smallpox and, even if given early in the incubation period, will sometimes prevent and usually modify the disease. New Britain has a population of about sixty thousand people. About thirty-two thousand were vaccinated. There were 49 cases with five deaths. The cost involved in dealing with this epidemic was about thirty thousand dollars.

Dr. George H. Bigelow of the Massachusetts Department of Public Health spoke on the "Definition of a Successful Vaccination." This brought out a general discussion of the problems of compulsory vaccination and the functions of Boards of Health and school authorities.

All of the addresses and discussions dealt with matters of daily importance to practitioners of medicine and it is unfortunate that clinicians do not generally attend these meetings of the Association.

There were about eighty members of the Association present.

TRUDEAU

"Over the doors of the hospitals for consumptives twenty-five years ago might well have been written these words: 'All hope abandon ye that enter here!' While today, in the light of new knowledge, we may justly place at the entrance of the modern sanatorium the more hopeful inscription: 'Cure sometimes, relief often, comfort always'."

That was said by Edward Livingston Trudeau before his death nearly ten years ago and to him belongs much of the credit for the change. During his lifetime tuberculosis from being considered a hopeless disease came to be regarded as a curable one. Open-air sanatorium treatment, begun in this country by Dr. Trudeau in the Adirondacks, was greatly responsible for this "light of new knowledge" that brought about the change.

Edward Livingston Trudeau was born in New York City on October 5, 1848. His boyhood was spent in France in pleasant, comfortable surroundings until after the Civil War in 1865 when he and his older brother returned to New York. Then something happened that changed his whole life. His brother, always delicate, developed tuberculosis. There were no trained nurses then, no knowledge of the need for disinfection and care of the germ-laden sputum. The doctor, even, cautioned against opening the windows and once a week would usually leave a new kind of cough medicine. For four months, until his death, Trudeau nursed his brother, sleeping often in the same bed with him and taking absolutely no precautions. "How strange that, after helping stifle my brother and infect myself through such teaching as was then in vogue, I should have lived to save my own life and that of many others by the simple expedient of an abundance of fresh air!" he says in his autobiography.

For Trudeau did become infected by his beloved brother. His life in New York at that time was carefree and easy and, had it not been for the influence of Miss Lottie Beare whom he loved, Trudeau would undoubtedly have become lazy and dissipated. But in 1868 he decided impulsively to become a student in the College of Physicians and Surgeons. His father had been a doctor, and his mother's father, a French physician, whose ancestors had been physicians for many generations so that, although the new life was difficult and it was hard to break away from his less serious-minded companions, he must have inherited a sincere love for the work. The year before he was graduated he had convinced Miss Beare that he was not like the frivolous set who were his friends. They became engaged and were married in June 1871, three months after he passed his examination for M. D.

Some swelling of the lymphatic glands on the side of his neck was the cause of his seeing a well known English physician while in Liverpool on their honeymoon. He said the glands were an evidence of a run-down condition and a tendency to scrofula, advised him to paint them with iodine, eat plenty of bacon for breakfast and take a tonic with iron in it! Neither Trudeau nor the doctor realized these glands really indicated tuberculosis. Later he had several attacks of fever but it was considered to be malaria and he took quinine for this. On the spur of the moment, however, when he had found his temperature to be 101° he dropped in one day on the late Dr. E. G. Janeway, of New York, a skilled diagnostician. He found "the upper two-thirds of the left lung was involved in an active tuberculosis process."

In his autobiography Trudeau says: "I stood on Dr. Janeway's stoop, I felt stunned. It seemed to me the world had suddenly grown dark. The sun was shining, it is true, and the street was filled with the rush and noise of

traffic, but to me the world had lost every vestige of brightness. I had consumption—that most fatal of diseases! Had I not seen it in all its horrors in my brother's case? It meant death and I had never thought of death before! Was I ready to die? How could I tell my wife, whom I had just left in unconscious happiness with the little baby in our new home? And my rose-colored dreams of achievement and professional success in New York! They were all shattered now, and in their place only exile and the inevitable end remained!"

And so they went to the Adirondacks and began there the life of hardship in the forests around Saranac Lake. In a wilderness then, with a 42-mile drive from Ausable Falls to Paul Smith's primitive though comfortable sporting resort, Trudeau began his "cure" in the clean air.

This step on the part of the great pioneer doctor probably furthered the cause of tuberculosis more than any other step taken by an American. No greater departure from former treatments of the disease could possibly have been made. Instead of going to a warm climate and remaining indoors with closed windows and no sunshine, Dr. Trudeau braved the coldest, snowiest winters. His many medical friends were open mouthed with astonishment at his daring and when it was found that he had withstood the Adirondack winter they began to admit there must be something of value in the treatment.

Other tuberculosis patients wished to find the power of healing that seemed to be in the woods and fresh air. The treatment was costly, however. Trudeau thought of the multitudes of poorer persons in the cities who were dying of his own disease and it was to help these that he conceived the idea of a cottage sanatorium there in the Adirondacks. He had no money with which to finance such a hazardous proposition and it was necessary to turn to his friends for financial help. Fortunately throughout his life, Trudeau's enthusiasm, his winning personality and now his undaunted courage in fighting his sickness had brought him many friends who loved and admired him. Little by little he convinced wealthy persons of the benefits that might be brought to sufferers who lived in the city. He begged from friends, from strangers, from everyone who he felt could well afford to help increase his sanatorium fund. At length he started with one little cottage and two factory girls from New York were his first patients.

His wife, his assistant physician, nurses, and the many mountain people who had grown to love Trudeau—all contributed toward keeping him from being discouraged during the first years of his new undertaking. Working at first in makeshift quarters for a laboratory, Dr. Trudeau became the pioneer of the treatment for tuberculosis which is used the world over today. In his autobiography he makes the following statements: "I was, as far as I can ascertain, the first in this country to cultivate the tubercle bacillus and confirm Koch's brilliant discovery." From his experiments on rabbits and guinea pigs he was able to demonstrate particularly the value of fresh air and good environment as contrasted with bad air and poor environment in tuberculosis.

Trudeau, himself, was never wholly cured. He often endured intense suffering and many times his life was despaired of, but the clean breezes of those mountains and his "beloved pines" always rallied him and he lived until 1915.

Trudeau Sanatorium, started forty years ago, in 1885, is a beautiful memory of him. Next year will be celebrated there the fortieth anniversary of the beginning of this new treatment for tuberculosis. During these years many other sanatoria have been started throughout the country and the work of preventing and curing tuberculosis has been greatly expanded. Trudeau's contribution to the world through tuberculosis study and through the rest and open air treatment has meant such a great saving of lives that wherever one is restored to health by his treatment the inspiration of Trudeau lives on. No greater tribute can be paid to the man than this thought.

Today in the United States there are available nearly 70,000 beds for the care of the tuberculous and it has been estimated that not less than 800,000 persons have passed through these sanatoria in the past decade. Of these close to 600,000 are still alive and this fact means that 6,000 less deaths have occurred than would have, had sanatorium beds not been available. Some of these are private and many of them have been made possible by Christmas seals that support the work of anti-tuberculosis associations.

Trudeau was elected the first President of the National Tuberculosis Association in 1904. Their work, begun and influenced by Dr. Trudeau, is supported by the annual sale of tuberculosis Christmas seals. His spirit, ten years after his death, is just as keenly felt and is today just as much of an inspiration to continue the work to prevent tuberculosis and diminish the yearly death toll.

Those who help in the seventeenth annual Christmas seal sale are perpetuating the memory of one who helped to bring "cure sometimes, relief often and comfort always" to thousands of disheartened sick persons.

ELIZABETH COLE.

RESULTS ATTAINED THROUGH COMPLIANCE WITH ARTICLE XII OF MILK REGULATIONS

ON March 7, the Milk Regulations were amended by the addition of Article 12, calling for milk from federal accredited herds or tested herds on the way to accreditation, under Fed-

eral supervision. The balance of the milk was pasteurized, and the bacterial standard was reduced to 100,000 bacteria per cubic centimeter instead of 500,000. While the dealers were notified of this amendment in March, the real start was made in December, 1923. A survey of the dealers selling raw milk was made as to their testing their herds or pasteurizing. At this time thirty-one licensed dealers were selling approximately 17,000 quarts of raw milk, three of the thirty-one were selling certified and the herds of four others were already accredited.

Very early in the game six dealers had herds tested, eighty-five cows passed the test and sixty-six reacted. By March 15 many applications for tests were made and six dealers ordered pasteurizing outfits. Herds were tested until the government appropriation was exhausted, all but four herds were tested and they were compelled to wait until June for the new appropriation. By June 1 pasteurizing outfits were installed in four plants. Seventeen herds had been tested and three dealers installing outfits were held up by the inability of dairy supply houses to ship all equipment. By July 15 all herds had been tested and all outfits installed and in operation. Twenty herds were tested. Two hundred and seventeen reactors were found and 206 cows passed the test, showing 51.3 per cent reactors for the first test. The seven dealers pasteurizing and two buying part of their supply pasteurized show a change of over 3,000 quarts raw to pasteurized. Boston's milk supply is now 96.72 per cent pasteurized.—*Excerpt from the August, 1924, Bulletin of the Boston Health Department.*

CARBON MONOXIDE POISONING IN SMALL GARAGES

THE newspapers recently carried a news item of the death from carbon monoxide poisoning of a prominent Baltimore man, who was found dead in his garage with the engine of his automobile still running. With the onset of colder weather such accidents will probably increase in frequency, says the Surgeon General of the United States Public Health Service, who warns automobile owners of the danger involved in running a gasoline engine in a small closed space for any considerable period of time.

In tests of the exhaust of a small 23 horsepower automobile engine it has been found that it discharged approximately 25 cubic feet of gas per minute, samples of which gave an average of 6 per cent carbon monoxide, or 1.5 cubic feet of deadly carbon monoxide gas per minute. Of course larger engines will give off more. Now a ratio of 15 parts carbon monoxide to 10,000 parts of air is considered a dangerous concentration to be exposed to for a considerable time; and the small 23 horsepower engine in "warming up" and giving off only one cubic foot of carbon monoxide per minute would contaminate the air of a small closed garage, 10 by 10 by 20 feet, to the danger point in about three minutes.

The attack of carbon monoxide poisoning comes on insidiously, and consciousness is gradually lost. Even though the victim may become aware of the danger he is often unable to escape from it because of the great loss of motor power. Death results from paralysis of the respiratory apparatus.—*United States Public Health Service.*

ADVOCATES FEEDING COWS WITH COD LIVER OIL

PROFESSORS LAINE and VAGLIONO, in a paper read before the Academy of Science, advocate feeding cows with cod liver oil, which has exceedingly valuable qualities for combating and curing infantile rickets, serofula and other diseases accompanied or caused by a general state of debility.

The oily liquid cannot be digested by newborn infants, who thus, hitherto, have been deprived of the medicine. Experiments on rats which the *New York Times* reports the two professors as having conducted led to the discovery of the means of overcoming the difficulty. They found that it was possible to transmit the anti-rachitic qualities of cod liver oil to milk by feeding the cows with the oil. It was not stated what effect this novel treatment has on the cows themselves.

Professor Vidal of the Academy of Medicine, who sponsored the discovery, said, however, that in the future the discovery would make it possible to prevent rickets among those newborn babies predisposed to the disease, as the milk from the cows thus treated possessed not only curative but preventive qualities.—*The Nation's Health.*

NEWS ITEMS

ASSOCIATION OF AMERICAN MEDICAL COLLEGES TO MEET IN MARCH—The Association of American Medical Colleges will meet in Boston next March. Dr. Edsall, Dean of Harvard Medical School, Dr. Ruchmore, Dean of Tufts, and Dr. Beggs, Dean of Boston University School of Medicine, have already met to discuss tentative plans for the meeting. The program will be largely educational.

SUBSCRIPTION DINNER FOR DR. WORCESTER

A GROUP of Dr. Alfred Worcester's friends is to give a subscription dinner at the Hotel Somerset on December 1. The committee in charge consists of John W. Bartol, Enos H. Bigelow, Vincent Y. Bowditch, Walter P. Bowers, Richard C. Cabot, Richard Collins, H. Quimby Gal-

lupe, Henry Jackson, Roger I. Lee, Dwight O'Hara, Fred C. Shattuck, George C. Smith, and Henry A. Wood. Any Fellows of the Society wishing to join in the dinner are invited to make reservations by writing to Dwight O'Hara, 751 Main Street, Waltham.

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

Dr. Edwin T. Wyman of Boston spoke on "Infant Feeding" before the Worcester North District Medical Society on October 28, 1924.

COMMITTEE ON MEDICAL EDUCATION AND PEDAGOGICS

The preliminary meeting of the Committee on Medical Education and Pedagogics of the Association of American Medical Colleges was held at the University of Virginia, Charlottesville, Virginia, October 10, 11 and 12.

The Committee has under consideration a report concerning pre-medical education. The Committee consists of Dr. A. S. Begg, Chairman, Boston University; Dr. Theodore Hough, University of Virginia; Dr. Burton D. Myers, University of Indiana; Dr. G. Canby Robinson, Vanderbilt University, and Dr. L. S. Schmitt, University of California. The report of this Committee will be submitted to the colleges in membership in the Association in time for action by the various Faculties, prior to the official action of the Association at the Boston meeting in March.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about Three Hundred Dollars, will be made on July 14, 1925, provided that an essay deemed by the Committee of Award to be worthy of the Prize shall have been offered.

Essays intended for competition may be upon any subject in Medicine, but cannot have been published. The essay should represent an addition to the knowledge and understanding of the subject based either upon original or literary research. They must be typewritten, and in English acceptable for publication without necessity for editing by the Committee. Any illustrations should be appropriate and correctly annotated with the text. Essays must be received by the Secretary of the College on or before May 1, 1925.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1924 has been awarded to Dr. Gordon Cameron, Victoria, Australia, for his Essay entitled: "Pancreatic Anomalies; their Morphology, Pathology and Clinical History."

John H. Girvin, *Secretary*,
19 South 22d Street, Philadelphia, Pa., U. S. A.

Lectures on the History of Biological Sciences.—The first lecture of Dr. Henderson's series was given on Tuesday, October 28, at 4.30 P. M., in the Bowditch Library of the Harvard Medical School. This course of lectures on the History of Biological Sciences will consist of a more or less continuous discussion of the development of these sciences from early times until the present day.

Series of Physiological Conferences.—A series of Physiological Conferences are to be held in the Bowditch Library at the Harvard Medical School every Wednesday at 4 P. M. Dr. William Einthoven addressed the conference on October 29, the subject being "Fine Threads in Physiology." On November 5 Dr. T. P. Hughes spoke on "Some Factors in Endothelial Permeability."

REMOVALS

Dr. George E. Emery, of Worcester, now has his office at 340 Main Street.

Dr. Francis J. Butler, of Worcester, has moved from Lincoln Street to 44 Pearl Street.

Dr. Augustus Thorndike, Jr., has moved his office from 481 to 66 Commonwealth Ave., Boston.

Dr. Randall Clifford has changed his office from 11 Marlborough St. to 475 Commonwealth Ave., Boston.

Dr. William E. Ladd has changed his office from Dartmouth St. to 66 Commonwealth Ave., Boston.

Dr. John H. Bufford has discontinued his Boston office and now has his office at 81 Toxteth Street, Brookline.

Dr. Fred R. Dame of Athol has moved from Washington Street to 1302 Main Street.

Dr. Aubrey C. Benjamin, of Chelsea, now has his office at 816 Broadway, that city.

DR. FREDERIC C. COBB has been transferred from the Essex South District to the non-resident list, Hamilton, Bermuda.

DR. HORACE GRAY has been transferred from Boston (Suffolk) to Santa Barbara, California, where his address is 148 Eucalyptus Lane.

DR. ALBERT B. MURPHY has moved from the Mayo Clinic, Rochester, to the Quigley Clinic, Everett, Wash.

DR. EARL E. FIPPHEN, of Worcester, now has his office at 21 West Street.

DR. EDGAR A. FISHER'S office in Worcester is now at 340 Main Street.

DR. WALLACE A. PARKER has moved from Fiskedale to Auburn, Mass.

DR. AUGUSTA G. WILLIAMS' address is 295 Wheatfield Street, North Tonawanda, N. Y.

DR. H. W. HERSEY has moved from Greenwich to Bridgeport, Conn., where he is at the Bridgeport Hospital.

DR. HARRY W. HAMMOND has moved from Asheville, N. C., to Chocorua, N. H.

DR. MORRIS FRANK has moved from 152 to 173 Humboldt Ave., Roxbury.

DR. RALPH F. HODGDON has moved from Somerville (Mid. So.) to Winchester (Mid. East), Herrick St.

DR. ARTHUR R. KIMPTON has moved his office from 66 to 23 Bay State Road, Boston.

ADDRESS UNKNOWN: Benjamin Samuel Sharp.

DR. MAX HYMAN has changed his office from 524 to 123 Westford St., Lowell.

NOTICES

PHYSIOLOGICAL AND BIOCHEMICAL CONFERENCE—Professor S. P. L. Sorensen, of the Carlsberg Laboratory of Copenhagen, will address the Physiological and Biochemical Conference on "The Carlsberg Institution" in the Auditorium of Building C, Harvard Medical School, on November 14, at 4 P. M.

NEW ENGLAND PEDIATRIC SOCIETY

THE annual meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, November 14, 1924, at 8:15 P. M.

I. Report of the Council.

II. The report of the Treasurer.

III. The following papers will be read:

1. A comparison of Infant Foods in Percentages of Total Calories, Grover E. Powers, M. D., New Haven, Conn.

2. Newer View Points in Infant Feeding, Edwards A. Park, M. D., New Haven, Conn.

IV. The election of officers.

Light refreshments will be served after the meeting.

EDWIN H. PLACE, M. D., *President*,
JOSEPH GARLAND, M. D., *Secretary*.

HARVARD MEDICAL SOCIETY

THE next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, November 11, 1924, at 8:15 P. M. The program follows:

1. Demonstration of cases.

2. The Western Reserve Medical School (Historical Note), by Dr. Harvey Cushing.

3. Experimental and Clinical Experiences with Biliary Cystography—Dr. L. R. Whitaker and Dr. Gibbs Milliken.

All members of the medical profession, medical students and nurses are invited.

SAMUEL A. LEVINE.

THE REPORT OF THE COMMITTEE ON HEALTH EXAMINATIONS

BY direction of the President the report of the Committee on Health Examinations is published in this issue of the JOURNAL.

The President has advised that copies of the chart, which appears at the end of the report, should be available for the members of the Society. The JOURNAL will have these copies on file and will send one to any member who may apply. A small charge will be made for other copies.

BOSTON UNIVERSITY SCHOOL OF MEDICINE

AT the Boston University School of Medicine there has been established a series of weekly exercises for the entire student body to be held on Wednesdays from 12 to 1.

On the first Wednesday of each month a speaker covers some topic of general interest; the remaining periods are given to papers by members of the student body. These papers have to do largely with medical history and biography. The program so far has included the introductory exercises by Dr. C. T. Howard, chairman of the committee in charge of the work; a talk on "Relations of Hospital and Medical School" by Dean A. S. Begg, Dr. H. M. Pollock and Dr. J. Emmons Briggs. Papers by students have been as follows:

"Early Chinese Medicine," by Mr. S. S. Lee.

"Medicine Among the Egyptians," by Miss Rachel Hardwick.

"Early Medicine in Mesopotamia," by Mr. George Rosenberg.

"Moses and the Early Jewish Medicine," by Miss Miriam Katzeff.

The first part of the course is planned to cover periods in medicine and the second part is to be devoted to biographical papers. The committee in charge is undertaking a four-year program and has planned to avoid duplication.

ANNUAL MEETING OF THE NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS

THE annual business meeting of the National Committee for the Prevention of Blindness will be held in the Russell Sage Foundation Building, 130 East 22d Street, New York, Thursday, November 13th, at half-past four o'clock.

Heretofore the annual conference of the Committee has consisted of but one meeting. This year the conference will cover four days, beginning Monday, November 10th, with an institute particularly arranged for volunteer workers. Every one interested is most cordially invited to attend the meetings.

Apply to 130 East 22d St., New York, for further information.

CENSORS' MEETING

THE Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, November 6, 1924, at 4.00 o'clock.

Candidates should make personal application to the Secretary, and present their medical diploma at least one week before the examination.

LESLEY H. SPOONER,
Secretary.

520 Commonwealth Ave.

LECTURE ON RECOVERY PROCESS AFTER MUSCULAR ACTIVITY

ARCHIBALD VIVIAN HILL, A. M., Sc. D., F. R. S., Professor of Physiology, University College, London, will speak on "Recovery Process after Muscular Activity" at five o'clock on November 21 in Amphitheatre C, Harvard Medical School. Physicians are cordially invited to attend.

It is of interest to note that Dr. Hill was the winner of the Nobel Prize in Physiology last year. Herter Lecturer.

BRISTOL SOUTH DISTRICT

The program for the Nov. 6, 1924, meeting is as follows:

Preventive Obstetrics, by Dr. Robt. L. DeNormandie.

Following this paper Dr. DeNormandie will give a talk relating to the Joint Committee on Maternal Welfare.

SOCIETY MEETINGS

Bristol South Medical Society

Next meeting will be held Thursday, November 6, 1924.

Essex North District Medical Society

January 7, 1925. Semi-annual meeting at Haverhill.
May 6, 1925. Annual meeting at Lawrence.

Hampden District Medical Society

Meetings to be held on the third Tuesday of January and the third Tuesday in April.

Hampshire District Medical Society

The meetings will be held the second Wednesday of November, January, March and May.

Dr. Channing Simmons will deliver an address at the November meeting. Title: "The Treatment of Cancer, with Especial Reference to Radiation."

Middlesex East District Medical Society

Wednesday, November 19. Harvard Club. Dr. George K. Pratt, "Community Aspects of Psychiatry."
Wednesday, January 21. Harvard Club. Dr. Franklin K. White, "Diagnosis of Gall-Bladder Disease."
Wednesday, March 18. Harvard Club. Dr. John H. Cunningham, "Urinary Retention: Its Significance and Treatment."
Wednesday, April 15. Harvard Club.
Wednesday, May 13. Colonial Inn, North Reading.

Middlesex North District Medical Society

January 28, 1925.
April 29, 1925.

Middlesex South District Medical Society

Winter Schedule—The plans for winter meetings of the Society include the stated meetings in October and April, two hospital meetings, and five meetings to be held in conjunction with the Suffolk District Medical Society and the Boston Medical Library (two surgical, two medical, and one general).

Norfolk District Medical Society

November 25, 1924. Masonic Temple, Roxbury. Subject: Diabetes—with especial reference to insulin. Speakers: Dr. Joslin and probably one other.
January 27, 1925. Masonic Temple. Subject: "Some Trends of Medical Teaching and Medical Practice." Speakers: Drs. A. S. Begg and W. P. Bowers.
February 24, 1925. Masonic Temple. Subject: "The Need of Periodical Physical Examinations and How to Make Them." Speaker: Dr. Francis H. McCrudden. A second speaker will be selected to present another subject at this meeting.
March 31, 1925. Tufts College Medical School. This meeting given over to Drs. Leary and Watters for the purpose of giving us a medical examiners' talk.

Norfolk South District Medical Society

Meetings will be held the first Thursday of each month from October to May, inclusive, at 12 noon, at the Norfolk County Hospital, South Braintree.

The speaker for November 6 is Dr. Robert L. DeNormandie. Subject, "Maternal Welfare."

Suffolk District Medical Society

November 12. Surgical Section, in association with the Middlesex South District Medical Society. "The Treatment of Septicemia by the Newer Methods," Dr. Edward B. Pieper, Philadelphia, Pa.
December 17. Medical Section, in association with the Middlesex South District Medical Society. "The Newer Drug Treatment of Heart Disease," Dr. Paul D. White.
January 28. General meeting, in association with the Boston Medical Library and the Middlesex South District Medical Society. "Some Experiences of a Medico-legal Pathologist" (lantern slides), Dr. George B. Magrath.
February 25. Surgical Section, in association with the Middlesex South District Medical Society. "Pyelonephritis," Dr. Arthur H. Crosbie.
March 25. Medical Section, in association with the Middlesex South District Medical Society. "The Treatment of Pneumonia," Dr. Edwin A. Locke.
April 29. Annual meeting. "Hypertension and Longevity," Dr. Harold M. Frost.

Worcester District Medical Society

November 12, 1924. Grafton State Hospital. Dr. Charles Macfie Campbell of the Psychopathic Hospital, Boston, will speak on "Nervous Disorders in Children."
December 10, 1924. Worcester State Hospital. Subject and speaker to be announced.
January 7, 1925. Surgical meeting. Place, subject and speaker to be announced.
February 11, 1925. Memorial Hospital, Worcester. Papers will be read by the members of the hospital staff.
March 11, 1925. St. Vincent's Hospital, Worcester. Papers will be read by the members of the hospital staff.
April 9, 1925. Subject and speakers to be announced.
May 14, 1925. Annual meeting.